

TESTIMONY RE: HB5347
AN ACT PROHIBITING THE USE OF LATEX GLOVES IN FOOD BUSINESSES
General Law Committee.

Chairmen: Senator Carlo Leone and Representative David Baram.
Ranking Members: Senator Kevin Witkos and Representative Dan Carter.

Connecticut House of Representatives
February 2, 2015

My name is Mary Catherine Gennaro and I am a board certified family physician from Plymouth, NH. I am here to speak on behalf of the proposed legislation HB-5347 to ban the use of latex gloves and utensils from food service.

Traditionally latex has been thought of as a glove, a ball, or a thing, not an organic substance. This is incorrect. Natural rubber latex is a plant based protein that runs as sap from the *Hevea Brasiliensis* tree. It is similar to sap that runs through maple trees. It is as much a product of a plant, like a tomato or a peanut is, and can be as dangerous. However, unlike peanut or other plants, natural rubber latex is found in over 40,000 common products.

The allergy manifests in many ways from rash to full-blown anaphylactic shock, which can lead to death. My own allergy started as a rash on my hands and progressed to internal and external swelling with severe abdominal pain, severe diarrhea, racing heart, flushing and shortness of breath. Every time I accidentally ingest latex through latex contaminated food I develop anaphylactic symptoms, although I have not yet experienced shock. This has been a progressive disease for me as it is for many. This allergy is insidious. It comes on slowly and we often have no idea we have the problem. There is no cure only avoidance.

Latex allergy is a worldwide health issue. Approximately 4% of all allergy sufferers have a latex allergy as their primary allergen. According to a study done in Spain latex allergy suffers are the fourth largest group of allergy patients-international. Studies have shown as high as 6% of the general population have a latex allergy (See "Rubber Gloves: "Born" and Now Banished - at Johns Hopkins Hospital-01/14/2008", Johns Hopkins Medicine). Seventeen percent of healthcare workers and over sixty percent of children with Spina Bifida are affected. Recent studies indicate approximately 11% of our elderly population are allergic. (Grieco et al., Journal of Immunity and Aging 2014,11:7 Latex sensitization in elderly: Allergological study and diagnostic protocol). Also at risk is anyone with multiple surgeries due to exposure of latex through mucous membranes as well as "food service workers, hairdressers, routine housekeeping, maintenance" (NIOSH-web site). There is evidence food service employees have the same risk as health care workers (up to 17%). This is a Worker's Compensation issue. (Journal of Food

Protection, Vol 71, No. 11, 2008 Page 2336, Latex Glove Use by Food Handlers: The Case for Non-latex Gloves.)

Donald H. Beezhold, et.al. did an experiment that showed the protein from the latex glove transferred (contaminated/alterd)to the food 100% of the time regardless of manufacturer. There was no transfer of protein from the vinyl. (Journal of Allergy and Asthma: Latex Protein: A Hidden "Food" Allergen? P. 304)

The latex protein leaches onto food every time someone wearing latex gloves or latex utensils touches the food. As we ingest the latex-contaminated food, the human host is inoculated with the latex protein through mucosal membranes: mouth, esophagus, and stomach, similar to the surgical patients who are at high risk. This puts all people at risk to develop the allergy and have an allergic reaction. Multiple exposures to this allergen increase the risk of developing this allergy as well as the life-threatening reactions. This could explain why some adults and children, like my son, are developing the allergy in spite of no known risk factors.

Gloves are supposed to protect the consumer from any bacteria should the employee not wash their hands appropriately. Latex has been shown to fail in protection anywhere from 1-58% of the time. (See article in Skin and Allergy News, December 2001 volume 32, number 12 page 1). According to several studies (see Washington Post Article) employees are less likely to wash their hands if wearing gloves. One study done in the UK and the USA in 2010 found an increase in coliform bacteria in food, 2 fold, compared to food prepared without gloves.

The reality: latex gloves do not protect from cross contamination of anything. In fact these products actively cross-contaminate and alter the food with the latex protein. You must change your gloves after each thing you do. This is simply not done.

The FDA Food Code written in 2009 defines a "safe material" on page 21 as "an article manufactured from or composed of materials that may not reasonably be expected to result, directly or indirectly, in their becoming a component or otherwise affecting the characteristics of any FOOD."

Latex gloves and utensils do not meet this FDA safety standard. Latex is known to contaminate food 100% of the time. It stays on the surface for 24 hours regardless of washing. It becomes a part of that food and it alters it. Touching food with latex is similar to spreading a thin film of peanut butter on the cheese sandwich of a peanut allergic patron. The difference is you can see and smell the peanut butter. You can taste it. Latex film is invisible, odorless and tasteless on food. But it is there, unknown to us and it can be deadly. I am not allergic to cheese. I am allergic to latex. If you hand me a cheese sandwich handled with latex gloves I will begin to have a severe reaction in about 20 minutes. This alters the cheese sandwich from a safe product to a deadly poison for me, and at least 3 million people like me.

The CDC states the only way to prevent is avoidance. The only way to treat this allergy is avoidance. CDC/NIOSH states that only people handling infectious diseases should be using latex gloves. Even in this situation there are nonlatex alternatives available. They recommend that food service workers should not be using latex gloves. (See #1 in NIOSH suggestions for Preventing Latex Allergy in the Work Place handout Also, on the CDC web site under Saving Lives protecting the people latex allergy).

Latex is so toxic that Johns Hopkins Hospital banned it in 2008. This is the facility where the use of latex gloves was "born" and yet they were one of the first to ban it- see article "Rubber Gloves: "Born" and Now Banished- At Johns Hopkins Hospital- 01/14/2008" published in Johns Hopkins Medicine.

This allergy is 100% preventable. Rhode Island, Arizona and Oregon have banned it. Several years ago I sent a letter to Alex Ray, owner of the largest chain of Restaurants in New Hampshire (The Common Man chain), discussing the ramifications of latex glove use on the consumer as well as the employee and employer. It is a Worker's Compensation issue. After he researched it thoroughly, he removed it from all of his restaurants. He now advertises that he takes his patrons "safety seriously" and only uses non- latex gloves. (See menu from Common Man- Italian Farmhouse). He transitioned his restaurants slowly, which caused no disruption to his business.

Even the glove industry knows this is a problem as they all make non-latex gloves. Nobody will suffer banning latex use in the food industry; however, latex-allergic people will benefit and at risk patrons and restaurant workers may be prevented from developing this allergy and becoming like me. Any risk of transmitting this known, potentially toxic protein, and causing harm is too high.

I sincerely hope that you will follow the CDC/NIOSH recommendations and Johns Hopkins lead and protect all of us, those of us who already have the allergy and those of us who will develop it through exposure, especially since there are many credible, less expensive alternatives that do not alter our food. Please look favorably on this bill and ban the use of all latex in food service.

Thank you for your time and consideration of HB5347.

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<http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM189448.pdf>

"Safe material" means:

- (1) An article manufactured from or composed of materials that may not reasonably be expected to result, directly or indirectly, in their becoming a component or otherwise affecting the characteristics of any FOOD;
- (2) (9) Describing FOODS identified as MAJOR FOOD ALLERGENS and the symptoms that a MAJOR FOOD ALLERGEN could cause in a sensitive individual

Senator Jeanie Forrester
State House
Room 105
107 North Main Street
Concord, NH 03301

January 29, 2015

Dear Senator Forrester:

Thank you for responding to my e-mail regarding legislation to ban latex gloves from food service.

People are under the mistaken impression that latex gloves are inert but in fact latex is a tree sap-an organic substance. Latex is made up of multiple proteins that are potential allergens and they cross react with many foods - avocado and banana being two of the most common.

The latex protein transfers from the glove to any surface with which the glove comes into contact, such as food, plates, eating utensils etc. This means that anyone who ingests food that has been prepared with latex gloves, ingests this invisible, tasteless toxin and becomes inoculated with the allergen. This puts all of us at risk, not just the food service worker and people like myself who are already allergic, but all people who eat the food. I believe this is the reason we are seeing this allergy in children, like my son, who have no known risk factors.

The FDA defines a "safe material" as "an article manufactured from or composed of materials that may not reasonably be expected to result, directly or indirectly, in their becoming a component or otherwise affecting the characteristics of any food." Clearly latex gloves and utensils do not meet this definition.

There are more people in the United States allergic to latex than any other food (latex is a plant based protein). The estimate for latex allergy in the general population is 1-6%. In the healthcare field the estimate is 17% and there is literature to support that this number is becoming true in food service as well. Children with Spina Bifida and anyone who has had multiple surgeries has a 60+% chance of having this allergy. The high estimate for peanut allergy is 1.3% and all seafood in adults is 2.8%,(crustaceans is 1.2%, fish 0.4%). The other major food allergies combined equal 1% (milk and egg- 0.4%, tree nuts 0.6%) (Food Allergy Research and Education).

People with traditional food allergies see and taste their food so they can easily avoid their toxin. We cannot see our allergen on our food and do not taste it when we eat. However, we react to it every time the same way people with other food allergies react.

I have enclosed documentation to back up the testimony I am presenting next week in Connecticut. Included are web sites with the meaningful information so that you may easily access to the entire document. I also highlighted the areas of interest in all articles.

Ideally, the use of latex gloves in medical and dental fields should be banned as well. Fortunately in NH many of our hospitals, including Speare Hospital in Plymouth, Cottage Hospital in Woodsville, Littleton Regional Hospital and Dartmouth-Hitchcock Medical Center became Latex safe in the early-mid 2000's but as far as I know there is no rule on this.

Thank you again for being so willing to listen. I look forward to meeting with you in June. Please feel free to contact me at any time if you have any questions or concerns.

Sincerely,

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RULES AND REGULATIONS
PERTAINING TO THE USE OF LATEX GLOVES
BY HEALTH CARE WORKERS,
IN LICENSED HEALTH CARE FACILITIES, AND
BY OTHER PERSONS, FIRMS, OR CORPORATIONS LICENSED OR
REGISTERED BY THE DEPARTMENT

(R23-73-LAT)

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

DEPARTMENT OF HEALTH

May 2002

INTRODUCTION

These rules and regulations are promulgated under the authority of Chapters 23-73 and 23-17 of the General Laws of Rhode Island, as amended, and are established for the purpose of adopting requirements for the use of latex gloves by health care workers, by other persons, firms, or corporations licensed or registered by the Department of Health, and the use of latex gloves in licensed health care facilities. The use of disposable, nonsterile and sterile natural rubber latex gloves shall be prohibited by any person, firm, or corporation, registered pursuant to sections 21-27-10 and 21-27-11 of the Rhode Island General Laws, as amended (e.g., retail food service establishment).

The Rhode Island General Assembly found that latex allergies are increasingly becoming a problem for people who are exposed to disposable non-sterile and sterile latex gloves, such as health care workers, patients, food service workers, manufacturers, hair dressers, child care workers, and children. There are three (3) types of reactions that can occur in persons using latex products: (1) irritant contact dermatitis; (2) allergic contact dermatitis (delayed hypersensitivity); and (3) immediate hypersensitivity latex allergy.

Reaction to latex may manifest through skin rashes, hives, itching, swollen skin, swollen lips and tongue, shortness of breath, dizziness, fainting, eyes or sinus symptoms, asthma and difficulty breathing, coughing spells, wheezing, and shock. In 1997, the National Institute for Occupational Safety and Health issued an alert concerning the danger of exposure to latex products and requested assistance preventing allergic reactions to natural rubber latex among workers who use gloves and other products containing latex.

On April 12, 1999, the Occupational Safety and Health Administration, United States Department of Labor, issued the Technical Bulletin concerning the potential harm to workers from natural rubber latex gloves and other natural rubber products, such as gloves, airway masks, medication vial caps, anesthesia bags, catheters, intravenous supplies, dental dams, balloons, and other products. Latex gloves are the major contributor for latex allergies. The United States Food and Drug Administration requires medical devices containing latex to carry a warning about potential allergic reaction.

In 1995, the American College of Allergy, Asthma, and Immunology concluded that the single greatest product causing adverse reaction to latex rubber are latex gloves. The National Institute of Safety and Health concluded that latex allergies can be prevented if employers establish policies that protect workers and the public from unnecessary latex exposure.

Pursuant to the provisions of section 42-35-3(c) of the General Laws of Rhode Island, as amended, consideration was given to: (1) alternative approaches to the regulations; (2) duplication or overlap with

other state regulations: and (3) significant economic impact placed on small business as defined in Chapter 42- 35 of the General Laws as a result of the amended regulations. No alternative approach, overlap or duplication nor any significant economic impact was identified, consequently the regulations are adopted in the best interest of the health, safety and welfare of the public.

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Section 1.0 *Definitions*

Wherever used in these rules and regulations, the following terms shall be construed as follows:

- 1.1 ***"Department"*** means the Rhode Island Department of Health.
- 1.2 ***"Director"*** means the Director of the Rhode Island Department of Health.
- 1.3 ***"Health care facility"***, pursuant to Chapter 23-17 of the Rhode Island General Laws, as amended, means any institutional health service provider, facility or institution, place, building, agency, or portion thereof, whether a partnership or corporation, whether public or private, whether organized for profit or not, used, operated, or engaged in providing health care services, including but not limited to hospitals; nursing facilities; home nursing care provider (which shall include skilled nursing services and may also include activities allowed as a home care provider, or as a nursing service agency); home care provider (which may include services such as personal care or homemaker services or as a nursing service agency); nursing service agency; rehabilitation centers; kidney disease treatment centers; health maintenance organizations; free-standing emergency care facilities, and facilities providing surgical treatment to patients not requiring hospitalization (surgi-centers); hospice care, and physician office settings providing surgical treatment. The term "health care facility" also includes organized ambulatory care facilities which are not part of a hospital but which are organized and operated to provide health care services to outpatients such as central services facilities serving more than one health care facility or health care provider, treatment centers, diagnostic centers, rehabilitation centers, outpatient clinics, infirmaries and health centers, school-based health centers and neighborhood health centers; providing, however, that the term "health care facility" shall not apply to organized ambulatory care facilities owned and operated by professional service corporations as defined in chapter 5.1 of title 7, as amended (the "Professional Service Corporation Law"), or to a private practitioner's (physician, dentist, or other health care provider) office or group of the practitioners' offices (whether owned and/or operated by an individual practitioner, alone or as a member of a partnership, professional service corporation, organization, or association). Individual categories of health care facilities shall be defined in rules and regulations promulgated by the licensing agency with the advice of the Health Services Council. Rules and regulations concerning hospice care shall be promulgated with regard to the "Standards of a Hospice Program of Care", promulgated by national hospice organization. Any provider of hospice care who provides such hospice care without charge shall be exempt from the licensing provisions of Chapter 23-17 of the Rhode Island General Laws, as amended, but shall meet the "Standards of a Hospice Program of Care." Facilities licensed by the Department of Mental Health, Retardation and Hospitals, and the Department of Human Services, and clinical laboratories licensed in accordance with chapter 16.2 of Title 23, as well as Christian Science institutions (also known as Christian Science Nursing Facilities) listed and certified by the Commission for Accreditation of Christian Science Nursing Organizations/Facilities, Inc. shall not be considered health care facilities for purposes of Chapter 23-17 of the Rhode Island General Laws, as amended.
- 1.4 ***"Health care provider"*** means any person holding a license, certificate, or registration issued by the Director and/or the Department that authorizes the person to provide health care services. For the purposes of these regulations, "health care provider" does not include those

persons who are employed by a "health care provider" or those persons employed by a licensed health care facility.

- 1.5 **"Health care worker"** means any person who has or may have direct patient contact in a health care facility, including, but not limited to, a physician, dentist, nurse, optometrist, podiatrist, physical therapist, social worker, pharmacist, or psychologist, and any officer, employee or agent of that provider acting in the course and scope of his or her employment or agency who has or may have exposure to latex gloves or other latex products. For the purposes of these regulations, **"health care worker"** shall also mean those non-employee staff, such as volunteers, who are involved in direct patient contact. Transient employees not involved in direct patient contact or outside contractors not involved in direct patient contact are exempt from the requirements stated herein.
- 1.6 **"Latex gloves"** or **"natural latex gloves"**, as used herein, mean gloves that are made, in whole or in part, of natural rubber latex, including gloves that are packed in powder which includes natural rubber latex particles.
- 1.7 **"Other person, firm, or corporation licensed or registered by the Department"**, as used herein, means any individual or facility that is licensed or registered by the Department and does not fall into the category of either health care provider or health care facility, as defined herein, and uses latex gloves in the course of rendering services for which the license or registration is issued (e.g., tattoo artist, hair dresser).
- 1.8 **"Person"** means any individual, trust or estate, partnership, corporation (including associations, joint stock companies), limited liability company, state, or political subdivisions or instrumentality of a state.

Section 2.0 ***General Requirements***

- 2.1 In those instances where a health care provider is employed by a health care facility or by another health care provider, the employer (i.e., health care facility or health care provider) shall be responsible for implementing the regulatory requirements contained herein.

Food Services

- 2.2 The use of disposable, nonsterile and sterile natural rubber latex gloves shall be prohibited by any person, firm, or corporation, registered pursuant to sections 21-27-10 and 21-27-11 of the Rhode Island General Laws, as amended (e.g., retail food service establishments, restaurants, cafeterias).

Notices

- 2.3 Health care providers, licensed health care facilities, and other persons, firms, or corporations licensed or registered by the Department that utilize latex gloves shall post a notice informing and warning employees and the public:

(1) that natural rubber latex gloves are used; (2) that exposure to latex may result in the development of an allergy; (3) that allergic reactions to natural rubber latex can manifest by skin rash, hives, nasal and eye irritation, asthma, and shock; and (4) that should you or your family experience allergic reaction symptoms, then you should contact your health care provider.

- 2.4 The notice required in section 2.3 shall include letters which are at least three-eighths (3/8) of an inch high and shall be posted in conspicuous areas (e.g., lobby, patient care areas, employee bulletin boards) throughout the premises.
- 2.5 The notice required in section 2.3 shall be posted in English, Spanish and other languages, as appropriate, to the language needs of the individuals served by the health care provider, health care facility, or other person, firm, or corporation licensed or registered by the Department. An example of an English language notice that contains the minimum required language appears in Appendix A. (For sample notices in languages other than English, please reference the Department's website: **www.healthri.org**).

Health Care Workers

- 2.6 Health care providers and licensed health care facilities shall provide health care workers with initial education and annual in-service education pertaining to latex safety. Such education may include:
- Obligations and requirements under the Act and the rules and regulations herein;
 - Nature of latex allergy;
 - Products and procedures that have been adopted by the facility or provider to minimize occupational allergy.
- 2.7 Licensed health care facilities shall ensure that health care workers are represented on latex allergy or safety committees.
- 2.8 Health care providers, licensed health care facilities, and other persons, firms, or corporations licensed or registered by the Department shall minimize health care workers' exposure to latex consistent with maintaining safety in regulated industries whose workers are exposed to blood borne pathogens pursuant to the provisions of the OSHA Blood Borne Pathogens Standard (See Reference 1). Non-latex gloves which provide a blood borne pathogen barrier are available which can minimize health care workers exposure to latex and protect the health care worker from blood borne pathogens.

Latex Minimization

- 2.9 Health care providers, licensed health care facilities, and other persons, firms, or corporations licensed or registered by the Department shall be engaged in latex minimization activities that may include the following components:

- Establishing protocols that evaluate symptoms suggestive of latex allergy during pre-employment and periodic evaluations;
- Systematically evaluating and replacing latex gloves with non-latex gloves;
- Utilizing only latex products that are nonpowdered; and
- Assessing the impact of preventive measures.

Section 3.0 *Severability*

- 3.1 If any provision of these rules and regulations or the application thereof to any person or circumstances shall be held invalid, such invalidity shall not affect the provisions or application of the rules and regulations which can be given effect, and to this end the provisions of the rules and regulations are declared to be severable.

Thursday, May 02, 2002
Latex-final regs-may02.doc

REFERENCES

1. "Blood Borne Pathogens", Occupational Safety and Health Administration (OSHA), 29 *Code of Federal Regulations* Part 1910-1000 to end, section 1910.1030.
2. *NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace*. U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control and Prevention, National Institute for Occupational Safety and Health. NIOSH publication number 97-135, August 1997. Available by calling: 1-800-356-4674 or via: pubstaft@niosdt1.ern.cdc.gov.

WARNING

Latex gloves are used in this facility.

**Repeated contact with latex may
cause a latex allergy or may worsen a
present
latex allergy.**

Reactions to latex may include:

**skin rashes
hives
asthma
nasal, eye, or sinus symptoms
and
allergic shock (anaphylactic shock).**

**If you or your family are having these
symptoms, call your health care
provider (your physician, nurse, or
dentist) immediately.**

PURSUANT TO R.I. GEN. LAWS § 23-73-2 (b)

Oregon Rules

<https://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Documents/foodsanitizationrulesweb.pdf>

Food Sanitation Rules Effective Date: September 4, 2012

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The official copy of an Oregon Administrative Rule is contained in the Administrative Order filed at the Archives Division, 800 Summer St. NE, Salem, Oregon 97310. Any discrepancies with the published version are satisfied in favor of the Administrative Order. The Oregon Administrative Rules and the Oregon Bulletin are copyrighted by the Oregon Secretary of State, Terms and Conditions of Use.

3-304.15 Gloves, Use Limitation.

(A) If used, single-use gloves shall be used for only one task such as working with ready-to-eat food or with raw animal food, used for no other purpose, and discarded when damaged or soiled, or when tears occur in the operation. (B) Except as specified in ¶ (C) of this section, slash-resistant gloves that are used to protect the hands during operations requiring cutting shall be used in direct contact only with food that is subsequently cooked as specified under Part 3-4 such as frozen food or a primal cut of meat.

(C) Slash-resistant gloves may be used with ready-to-eat food that will not be subsequently cooked if the slash-resistant gloves have a smooth, durable, and nonabsorbent outer surface; or if the slash-resistant gloves are covered with a smooth, durable, nonabsorbent glove, or a single-use glove.

(D) Cloth gloves may not be used in direct contact with food unless the food is subsequently cooked as required under Part 3-4 such as frozen food or a primal cut of meat.

(E) The use of latex gloves in food service establishments is prohibited.

(Chapter 3 page 30 of the Sanitation Rules)

Food Code Fact Sheet #10

What you should know about Code

WWW.HEALTHOREGON.ORG/
FOODSAFETY

OAR 333-150-0000, CHAPTER 3-304.15

(A) If used, single-use gloves shall be used for only one task such as working with ready-to-eat food or with raw animal food, used for no other purpose, and discarded when damaged or soiled, or when interruptions occur in the operation.²

(E) The use of latex gloves in food service establishments is prohibited.

PUBLIC HEALTH REASONS:

Gloves used in touching ready-to-eat food are defined as a "utensil" and must meet the applicable requirements related to utensil construction, good repair, cleaning, and storage.

Pathogens can be transferred to food from utensils that have been stored on surfaces which have not been cleaned and sanitized. They may also be passed on by consumers or employees directly, or indirectly from used tableware or food containers.

Some pathogenic microorganisms survive outside the body for considerable periods of time. Food that comes into contact directly or indirectly with surfaces that are not clean and sanitized is liable to such contamination.

Proper Glove Use

Gloves can help keep food safe by creating a barrier between hands and food. But if they are not used properly, they can contaminate food just as easily as dirty hands.

Train all food workers to wash their hands before putting on gloves and when changing to a new pair. To remove gloves, grasp them at the cuff and peel them off inside out over your fingers. Avoid touching any other part of the glove.

Make sure gloves fit properly. Glove size is important for safety and comfort. Select the correct size from small to extra large. Gloves that are too big will not stay on hands and ones that are too small will rip or tear easily.

When purchasing disposable gloves, be sure that they are made of food grade materials. Gloves made of latex are prohibited for use in food service.

You should change gloves:

- As soon as they become soiled or torn
- Before beginning a different task
- At least every four hours during continual use
- After handling raw animal product and
- Before handling cooked or ready-to-eat food

Never wash and reuse disposable gloves.

Gloves should be task specific - used for one food handling task and discarded.



Gloves are one of MANY options to avoid bare hand contact with ready-to-eat foods

For training information on proper glove use see: <http://www.foodhandler.com/training.cfm>.

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ARIZONA CODE

<http://www.azdhs.gov/phs/oeh/rs/pdf/fc2000.pdf>

TITLE 9. HEALTH SERVICES

CHAPTER 8: DEPARTMENT OF HEALTH SERVICES FOOD, RECREATIONAL
AND INSTITUTIONAL SANITATION

Preventing Contamination by Employees

3-301.11 Preventing Contamination from Hands.*

(A) FOOD EMPLOYEES shall wash their hands as specified under § 2-301.12.

(B) Except when washing fruits and vegetables as specified under § 3-302.15 or when otherwise APPROVED, FOOD EMPLOYEES may not contact exposed, READY-TO-EAT FOOD with their bare hands and shall use suitable UTENSILS such as deli tissue, spatulas, tongs, non-latex SINGLE-USE gloves, or dispensing EQUIPMENT

(C) FOOD EMPLOYEES shall minimize bare hand and arm contact with exposed FOOD that is not in a READY-TO-EAT form.

3-304.15 Gloves, Use Limitation.

(A) If used, SINGLE-USE gloves shall be used for only one task such

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as working with READY-TO-EAT FOOD or with raw animal FOOD, used for no other purpose, and discarded when damaged or soiled, or when interruptions occur in the operation.

(B) Except as specified in ¶ (C) of this section, slash-resistant gloves that are used to protect the hands during operations requiring cutting shall be used in direct contact only with FOOD that is subsequently cooked as specified under Part 3-4 such as frozen FOOD or a PRIMAL CUT of MEAT.

(C) Slash-resistant gloves may be used with READY-TO-EAT FOOD that will not be subsequently cooked if the slash-resistant gloves have a SMOOTH, durable, and nonabsorbent outer surface; or if the slash-resistant gloves are covered with a SMOOTH, durable, nonabsorbent glove, or a SINGLE-USE glove.

(D) Cloth gloves may not be used in direct contact with FOOD

unless the FOOD is subsequently cooked as required under Part 3-4 such as frozen FOOD or a PRIMAL CUT of MEAT.

(E) Latex gloves may not be used in direct contact with FOOD.

SAFE FOOD HANDLING-Food Safety Fact Sheet #4**“Handling Ready to Eat Foods”****Background Information**

Ready-to-eat foods are foods that are edible without washing, cooking, or additional preparation by the food handler and are reasonably expected to be consumed in that form. Ready-to-eat food includes: potentially hazardous food that is unpackaged and cooked to the temperature and time required for the specific food; raw, washed, cut fruits and vegetables; whole, raw fruits and vegetables that are presented for consumption without the need for further washing, such as at a buffet; and other food presented for consumption for which further washing or cooking is not required and from which rinds, peels, husks, or shells are removed. Cross-contamination from hands to foods is one of the leading causes of the spread of pathogenic organisms that lead to human illnesses. The avoidance of direct hand contact with ready-to-eat foods is one way to protect the food from contamination.

Key Concepts

Arizona State Health Code states that there should be no bare hand contact with ready-to-eat foods.

Physical barriers are required when handling ready-to-eat foods.

Acceptable means of handling ready-to-eat foods include using:

- Deli tissue
- Tongs
- Spatulas
- Dispensing Equipment
- Non-latex single-use gloves

Gloves and other barriers do not replace handwashing. Always wash your hands before putting gloves on and when changing to a new pair.

You should change gloves at the following times:

- As soon as they become soiled or torn.
- Before beginning a different task.
- After handling raw meat, fish, or poultry and before handling ready-to-eat food.

Never wash and reuse gloves.

Latex gloves should not be used, since allergens from the gloves may transfer to food and cause an allergic reaction in some individuals.



4

Food Protection Program Policies, Procedures and Guidelines

Issue: Guideline on Latex Glove Use in Retail Food Establishments **No:** RF 3-5

The Massachusetts Department of Public Health and the National Institute for Occupational Safety and Health (NIOSH) recommend that latex gloves NOT be used in food establishments. Latex gloves may cause severe allergic reactions in certain sensitized individuals. As stated in 105 CMR 590.004(E), **single-use natural rubber latex gloves are not recommended in food establishments.**

Symptoms of Latex Allergy

Latex allergies can produce a variety of symptoms, including skin redness, hives, itching, runny nose, sneezing, itchy eyes, scratchy throat, and asthma. While many cases are mild, in severe cases, exposure to latex may result in anaphylactic shock, a life-threatening condition. Symptoms may occur within minutes of exposure to latex or, in the case of allergic skin reactions, take up to 2 days to become evident.

Occurrence of Latex Allergies

Studies done on health care workers show that because of the repeated and prolonged exposure to latex gloves approximately 10% of this population has developed sensitivities to latex. Food establishment employees, who repeatedly use latex gloves, may also be at risk of developing sensitivity to latex which could result in their becoming allergic to a wide range of latex containing products. There is a concern that if food employees continue to use latex gloves, a significant percentage may develop allergies to latex.

Consumers who are sensitized to latex can be at risk if they consume food that has been handled by workers wearing latex gloves. The allergens from the gloves can be transferred to the food, and may cause a reaction in allergic individuals. Recent reports in the scientific literature indicate that approximately 1% to 6% of the general population is sensitized to latex. Although reactions appear to be rare, sensitized people may be at risk of experiencing an allergic reaction should they eat food which has been handled with latex gloves.

Recommendations

Food establishments should avoid the use of latex gloves. Good substitutes for latex gloves are available and include, vinyl, nitrile, polyvinyl, chloroprene, or polyethylene gloves, and deli tissues and tongs. As always, good handwashing practices are critical in food service operations.

Important Points

- Latex gloves are not recommended for use in food establishments.
- Repeated use of latex gloves has been shown to increase the risk of developing allergies to latex.
- In rare instances, consumers who have latex allergies may react to food which has been handled with latex gloves
- Good alternatives to latex gloves are available and include:
 - polyvinyl
 - nitrile
 - chloroprene
 - polyethylene
- Use of gloves can be limited by using utensils and deli tissues.
- Use of gloves does not decrease the need for good handwashing practices.

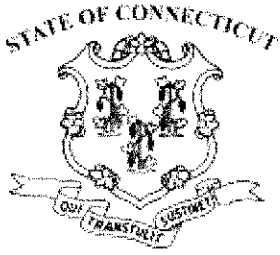
Internet Resources on Latex Allergies

The National Institute for Occupational Safety and Health (NIOSH):
www.cdc.gov/niosh/latexalt.html. Contains the full text of NIOSH's alert on latex allergy.

The Occupational Safety and Health Administration (OSHA)
http://www.osha-slc.gov/html/hot_3.html. Contains the full text of OSHA's Technical Information Bulletin on latex gloves.

Latex Allergy Links

<http://latexallergylinks.tripod.com>. Latex Allergy Links is a comprehensive and up-to-date listing of latex allergy-related sites on the Internet. It also includes articles and practical information about latex allergy, a message board, chat room, mailing list and guestbook. The members of Elastic, Inc., bring the National Latex Allergy Network this educational networking site to you.



5

General Assembly

Proposed Bill No. 5347

January Session, 2015

LCO No. 608

00608

Referred to Committee on GENERAL LAW

Introduced by:

REP. AMAN, 14th Dist.

AN ACT PROHIBITING THE USE OF LATEX GLOVES AT FOOD BUSINESSES.

Be it enacted by the Senate and House of Representatives in General Assembly convened:

That the general statutes be amended to prohibit the use of disposable latex gloves at food businesses, including locations where food or ice is held, processed, manufactured, packaged, prepared, displayed, served, transported or sold.

Statement of Purpose:

To prevent people who may be allergic to latex from coming into contact with latex without their knowledge.

THE SENATE
TWENTY-EIGHTH LEGISLATURE, 2015
STATE OF HAWAII

S.B. NO. 911 

A BILL FOR AN ACT

RELATING TO LATEX.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

SECTION 1. Chapter 321, Hawaii Revised Statutes, is amended by adding a new section to part I to be appropriately designated and to read as follows:

"§321- Dental health facilities; health care facilities; use of latex gloves prohibited. The use of latex gloves in dental health facilities and health care facilities, including all facilities listed in section 321-11(10), shall be prohibited."

SECTION 2. Chapter 321, Hawaii Revised Statutes, is amended by adding a new section to part XVIII to be appropriately designated and to read as follows:

"§321- Emergency medical services; use of latex gloves prohibited. The use of latex gloves by personnel providing ambulance services or emergency medical services pursuant to this part shall be prohibited."

SECTION 3. Chapter 328, Hawaii Revised Statutes, is amended by adding a new section to part I to be appropriately designated and to read as follows:

"§328- Food establishments; use of latex gloves prohibited. The

use of latex gloves in a food establishment permitted under title 11, chapter 12 of the Hawaii administrative rules shall be prohibited."

SECTION 4. New statutory material is underscored.

SECTION 5. This Act shall take effect on July 1, 2015.

INTRODUCED BY: _____

Report Title:

Health; Latex; Latex Gloves; Prohibitions; Dental Health Facilities; Health Care Facilities; Ambulances; Emergency Medical Services; Food Establishments

Description:

Prohibits the use of latex gloves in dental health facilities, health care facilities, by personnel providing ambulance services or emergency medical services pursuant to the state comprehensive emergency medical services system, and in food establishments.

The summary description of legislation appearing on this page is for informational purposes only and is not legislation or evidence of legislative intent.

PROPOSED LEGISLATION/BACKGROUND

DATE: January 28, 2015

Name: Cynthia (Cindy) Hespe, RPh, FCSHP

Organization (if any): Individual

Address: 5610 Marden Dr, Davis CA 95618

Telephone: (530) 564-4647 home; (208) 724-1924 cell

PURPOSE OF BILL (How will it change or improve problem in existing law?):

To ban the use of natural rubber latex gloves, utensils and other latex products in the food industry.

The purpose of this bill is to 1) protect individuals who have a latex allergy from life-threatening reactions; 2) prevent food industry workers and patrons from developing latex allergy. A secondary outcome will be to decrease Workers' Compensation claims well as potential law suits against the restaurant.

While safer alternatives are readily available, the Food and Drug Administration does not ban latex in health care or food industries. The FDA requires medical supplies to be labeled if products contain natural rubber latex – but does not require labeling of medications or food that has been contaminated with latex (by latex gloves, utensils, packaging, or any other source of latex).

Legislation is needed to 1) allow individuals with a latex allergy to safely purchase food; 2) prevent unnecessary exposure to latex to individuals required to wear gloves in their work; and 3) prevent unaware patrons from the inoculation and potential development of latex allergy.

Suggested language adapted from RI law:

1. Food service

To prevent the contamination of food with latex particles by banning the use of natural rubber latex (NRL) gloves, utensils and any other NRL product in food prep in California. This would impact restaurants, school cafeterias, and ready-to-eat products. Ideally, I would like to see this inclusive of food processors, packagers, handlers, and harvesters so that food would be safe farm-to-fork, from the point of harvest to the point it is served for consumption.

2. Non-food businesses

Require non-food businesses that use natural rubber latex gloves and balloons to post a clear warning that latex products are in use and include the health care risks of latex. These businesses may include health care environments, manufacturers, hair and nail salons, tattoo salons, child care environments, and others.

3. Natural rubber latex balloons

Prohibit natural rubber latex balloons at health care facilities/offices, restaurants, public parks, and community events to insure access to individuals with latex allergy.

STUDIES, REPORTS, STATISTICS & FACTS (List and attach all documented sources supporting your conclusion that there is a problem.)

Statistics vary by resource because latex allergy is not reported consistently and testing is unreliable. However, the CDC and American Latex Allergy Association (ALAA) estimate that 1-6% of the general population, up to 17% of health care workers, 38% of dental workers, and up to 68% of people with spina bifida have latex allergy. (1,2) One study published in 2014 indicates that 11.4% of elderly have latex allergy. (3) There is evidence that food industry workers' latex allergy rate is similar to health care workers.(4)

People at risk of developing latex allergy include:

- Health care workers
- Food service employees
- Rubber industry workers
- Patients with "atopic" conditions such as asthma, eczema, hay fever
- Patients who have undergone multiple procedures
- Workers in any environment with chronic latex exposure such as: restaurant/food industry, day care staff, hair salons, green house/agriculture workers, balloon and tattoo artists, security personnel, painters/artists, emergency response (police, fire fighters, EMTs), mortuary/funeral home staff, construction

Latex allergy ranges from mild (rash, runny nose) to severe (anaphylaxis/death). There is no cure for a latex allergy. The only treatment is avoidance of latex.(5) Medication is used for managing anaphylaxis or allergy symptoms, but cannot prevent reactions. Latex allergy has been proven to be progressive with repeated exposure. The person with contact latex allergy can transition to full anaphylaxis with a single exposure.

Latex allergy extends beyond latex gloves. According to the ALAA, there are over 40,000 consumer products that contain natural rubber latex. And the latex particles of many products become airborne which can lead to "occupational asthma." Approximately half of sensitized hospital workers develop latex asthma.(1)

Anecdotal reports of reactions to packaging commonly occur in the USA, but a report in the United Kingdom found 1/3 of food packaging contained natural rubber latex. (6)

This past year, the ALAA targeted food service in attempt to educate the public about the prevailing use of latex gloves in that industry by preparing this fact sheet:

<http://latexallergyresources.org/sites/default/files/article-attachments/Hidden%20Dangers%20Final.pdf>

The Asthma and Allergy Network's article, "How to Navigate Restaurants with Latex Allergy," on its website describes the challenges of obtaining safe restaurant meals:

<http://www.aanma.org/2015/01/how-to-navigate-restaurants-with-latex-allergy/>

References:

- 1) <http://www.cdc.gov/healthcommunication/ToolsTemplates/EntertainmentEd/Tips/LatexAllergy.html>
- 2) American Latex Association www.latexallergyresources.org
- 3) <http://www.immunityageing.com/content/11/1/7>
- 4) Journal of Food Protection, Vol 71, No. 11, 2008 Page 2336, Latex Glove Use by Food Handlers: The Case for Non-latex Gloves
- 5) <http://acaai.org/allergies/types/skin-allergies/latex-allergy>
- 6) <http://www.foodproductiondaily.com/Safety-Regulation/Latex-used-in-one-third-of-food-packaging-study-finds>

Resources:

American Latex Allergy Association www.latexallergyresources.org
American Academy of Allergy Asthma & Immunology www.aaaai.org
American College of Asthma, Allergy and Immunology www.acaai.org
OSHA www.osha.gov/SLTC/latexallergy/index.html
CDC/NIOSH Alert: Preventing Latex Allergic Reactions to Natural Rubber Latex in the Workplace www.cdc.gov/niosh/docs/97-135/pdfs/97-135.pdf

FISCAL IMPACT (How much will it cost? What has the Department of Finance written about similar legislation? If there is no cost, write "none.")

One significant consideration in Rhode Island's law was the reduction of Workers' Comp claims. According to allergist Anthony Ricci, MD, in a communication with the American Latex Allergy Association:

"... I was instrumental in convincing the administrators and medical directors of our community hospital (Kent Hospital) to clean the entire hospital and make it the only latex-safe hospital in Rhode Island. Our workers compensation cases went from approximately 80 prior to the change to zero since. This has resulted in significant cost savings. Many nurses and other health care

professionals with latex allergy have returned to work at Kent Hospital....”

With respect to restaurants and other businesses, latex-free gloves and utensils are no longer more expensive than latex products and are frequently less expensive to purchase.

URGENCY (Is there a need for speed? How fast must this matter be addressed? Why?)

While use of latex gloves and balloons in health care environments is down (but not eliminated), the use in other environments has increased. Today everyone has access to disposable latex gloves. These gloves are used by plumbers, hair stylists, restaurant workers, tattoo artists, house cleaners, day care staff, travel industry staff, police/fire/military staff, and more. Latex balloons provide cheap decoration for parties, fundraisers, charity events, and celebrations. These all are causing the next wave of new – and often preventable – patient groups with latex allergy.

This allergy is irreversible. With each day we delay regulation of natural rubber latex gloves, utensils and balloons, more unsuspecting individuals – many who have no idea their work is putting them at risk – are being exposed and developing a latex sensitivity or allergy.

LIKELY POSITIONS *Please answer to the best of your knowledge.*

- *Which key legislators do you think will most likely support/oppose your bill?*

Legislators with interests in health care and the safety of their constituents will support.

- *Which state agencies will most likely be affected by your bill?*

County health departments (environmental services?) will need to enforce in restaurants and public areas.

Department of Consumer Affairs would most likely enforce in medical and dental offices, pharmacies, labs, and other health care environments.

- *Which interest groups will most likely support or oppose?*

Support: Individuals with latex allergy, the American Latex Allergy Association, the Asthma and Allergy Network, Dr. Travis Miller (testified last year on behalf of allowing EpiPens in schools).

I would expect all allergy/asthma associations, the Spina Bifida Association, California Nursing Association and other health care associations to support.

Oppose: Natural rubber latex industry/lobbyists (and they have \$\$\$\$\$).

PRIOR OR SIMILAR LEGISLATION (Have there been similar bills proposed and/or passed before? In your answer, please include: bill number, author, session, and final bill status. This information can be obtained from <http://leginfo.ca.gov/>)

Three states (AZ, OR and RI) have laws or regulations that ban latex use in restaurants / food industry. RI also mandates that all (non-food) businesses post warning if latex products are in use.

RI: <http://law.justia.com/codes/rhode-island/2013/title-23/chapter-23-73>

AZ: see slide 24

<http://www.azdhs.gov/phs/oeh/fses/pdf/az-food-safety-food-code-requirements.pdf>

OR: see 3-304.15(E)

<http://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Documents/foodsantizationrulesweb.pdf>

Currently California does not regulate latex use in food industry, health care or any other business or public environment. Legislation has been introduced in 2015 in Hawaii in both senate and house (SB911 - Senator Suzanne Chun Oakland; HB1238 – Rep. Mele Carroll) and in Connecticut (HB 5347-Aman) to ban latex use in food industry. At this time, the Hawaii bill also includes prohibition of the use of latex gloves in dental health facilities, health care facilities, by personnel providing ambulance services or emergency medical services as well as in food establishments.

Hawaii:

http://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=SB&billnumber=911

http://www.capitol.hawaii.gov/measure_indiv.aspx?billtype=HB&billnumber=1238

Connecticut:

<http://www.cga.ct.gov/2015/TOB/H/2015HB-05347-R00-HB.htm>

MY PERSONAL STORY:

I graduated from pharmacy school in 1981 right as the AIDS frenzy began. I obtained latex allergy by wearing latex gloves as a hospital pharmacist and as a patient treated by dentists and physicians wearing latex gloves. I had risk factors: eczema, seasonal allergies and exposure to natural rubber latex gloves and medical/dental products. This is a progressive allergy: I transitioned from a mild latex allergy (contact allergy with a rash on my hands) to full anaphylaxis from 2 bites of a restaurant meal that was prepared with latex gloves. I have had 3 episodes of life-threatening anaphylaxis from eating restaurant food prepared with latex gloves. The last episode happened after quizzing restaurant staff about latex use in their kitchen. Staff assured me that no latex gloves were used, but the next day the manager admitted that latex gloves were indeed used in chopping in the prep kitchen, just not in the final plating of my meal. I have also had two

episodes of life-threatening anaphylaxis from a meal using pre-packaged ground turkey (cooked at home) which I later verified with the manufacturers that latex gloves were used in processing.

As a person with latex allergy, I buy special latex-free underwear, clothing, socks, and shoes. I have removed as much latex as possible from our home: toys, grips on tools and utensils, mouse pads and computer supplies, Band-Aids and ACE wraps, latex-backed rugs, and much, much more. I struggle to find latex-safe (and latex savvy) dentists, physicians, labs, physical therapists, and pharmacies. I had a surgery cancelled in 2013 because my local hospital was not prepared to care for a patient like me. The anesthesiologist told me he had no idea which medications and equipment contained latex. (Surgery was successfully completed 3 months later at UCDCMC in Sacramento; however, a delay in care could have been life-threatening.) I have struggled to find latex-safe work environments and have been discriminated against purely on my allergy. I could not attend my state professional conference for continuing education due to latex use (food prep and room cleaning) at the S.F. Hilton Hotel. We plan family vacations to states where I can find safe hotels and restaurants. I call manufacturers of medications and pre-packaged food products to make sure they have not been produced, processed, or packaged with latex gloves or equipment – neither are required to be labeled by the manufacturer. I have to leave any store that has latex balloons on display and at one point could not shop in any Davis markets due to balloons in the 3 major grocery stores (one Nugget has accommodated my allergy). I cannot purchase ready-to-eat food from vendors at the Davis Farmers' Market because the majority uses latex gloves in serving patrons. Several produce vendors wear latex gloves at the Farmers' Market as well. At least half of the Davis and Sacramento restaurants I have called use latex gloves in food prep.

Out of all the challenges in the life of a person with latex allergy, elimination latex gloves, utensils and balloons in the food industry – farm to fork – by legislation would improve safety for those of us who have a latex allergy and could prevent development of latex allergy in others.

Thank you for considering my request for legislation in our great state of California!

8

TESTIMONY RE: HB5347
AN ACT PROHIBITING THE USE OF LATEX GLOVES IN FOOD BUSINESSES

General Law Committee.

Chairmen: Senator Carlo Leone and Representative David Baram.

Ranking Members: Senator Kevin Witkos and Representative Dan Carter.

Connecticut House of Representatives
January 27, 2015

Good afternoon. My name is Mary Catherine Gennaro and I am a board certified Family physician from Plymouth, NH. I am here to speak on behalf of the proposed legislation HB-5347 to ban the use of latex gloves and utensils from food service.

Traditionally latex has been thought of as a glove, a ball, or a thing, not an organic substance. This is incorrect. Natural Rubber Latex is a plant based protein(s) that runs as sap from the Hevea Brasiliensis tree. It is similar to sap that runs through maple trees. It is as much a product of a plant like a tomato or a peanut is, and can be as dangerous. However, unlike peanut or other plants, natural rubber latex is found in over 40,000 common products.

The allergy manifests in many ways from rash to full blown anaphylactic shock which can lead to death. My own allergy started as a rash on my hands and progressed to internal and external swelling with severe abdominal pain, severe diarrhea, racing heart, flushing and shortness of breath. Every time I accidentally ingest latex through latex contaminated food I develop anaphylactic symptoms, although I have not yet experienced shock. This has been a progressive disease for me as it is for many. This allergy is insidious. It comes on slowly and we often have no idea we have the problem. There is no cure only avoidance.

Latex allergy is a worldwide health issue. Approximately 4% of all allergy sufferers have a latex allergy as their primary allergen. According to a study done in Spain latex allergy sufferers are the fourth largest group of allergy patients-international. Seventeen percent of healthcare workers and over sixty percent of children with spina bifida are affected. Recent data indicates approximately 11% of our elderly population are allergic. (Grieco et al. Journal of Immunity and aging 2014, 11:7 Latex sensitization in elderly: Allergological study and diagnostic protocol) Also at risk are anyone with multiple surgeries and "food service workers, hairdressers, routine housekeeping, maintenance" (NIOSH-web site). There is evidence food service employees have the same risk as health care workers (Journal of Food Protection, Vol 71, No. 11, 2008 Page 2336, Latex Glove Use by Food Handlers: The Case for Non-latex Gloves.)

Donald H. Beezhold, et.al. did an experiment that showed the protein from the latex glove transferred (contaminated) to the food 100% of the time regardless of

manufacturer. There was no transfer of protein from the vinyl. (Journal of Allergy and Asthma: Latex Protein: A Hidden "Food" Allergen? P. 304)

The latex protein leaches onto food every time someone wearing latex gloves or latex utensils touches the food. As we ingest the latex-contaminated food, the human host is inoculated with the latex protein through mucosal membranes: mouth, esophagus, and stomach. This puts all people at risk to have an allergic reaction. This could explain why some adults and children – like my son- are developing the allergy in spite of no known risk factors.

This is 100% cross contamination with a known potential deadly allergen. It is like spreading a thin film of peanut butter on the food of peanut allergy sufferers and not telling them. With one big difference, we cannot smell it, see it, or taste it. But it is there, unknown to us, and it is deadly and it will affect us every time.

Gloves are supposed to protect consumer from any bacteria should the employee not wash their hands appropriately. Latex has been shown to fail in protection anywhere from 1-58% of the time. (See article in Skin and Allergy News , December 2001 volume 32, number 12 page 1). According to several studies (see Washington Post Article) employees are less likely to wash their hands if wearing gloves. One study done in the UK in 2010 found an increase in coliform bacteria in food, 2 fold, compared to food prepared without gloves.

The reality: latex gloves do not protect from cross contamination of anything. You must change your gloves after each thing you do. This is simply not done. And in fact, as cited earlier latex gloves cross-contaminate 100% of the time with their own toxic protein.

The CDC states the only way to prevent and treat this allergy is avoidance and only people handling infectious diseases should be using latex gloves. They recommend that food service workers should not be using latex gloves. (See #1 in NIOSH suggestions for preventing Latex allergy in the work place handout Also, on the CDC web site under Saving Lives protecting the people latex allergy)

This is 100% preventable. Rhode Island, Arizona and Oregon have banned it. Several years ago I sent a letter to Alex Ray, owner of the largest chain of Restaurants in New Hampshire (The Common Man chain), discussing the ramifications of latex glove use on the consumer as well as the employer. It is a Worker's Compensation issue. After he researched it thoroughly, he removed it from all of his restaurants. He now advertises that he takes his patrons "safety seriously" and only uses non- latex gloves. (See menu from Common Man- Italian Farmhouse). He transitioned his restaurants slowly, which caused no disruption to his business.

Please help us keep our people safe by protecting them from the use of latex in food service. No one knows when the allergy will develop nor do they know the severity

of their first reaction or subsequent reactions. As we know this is 100% preventable, the CDC, in particular NIOSH (National Institute for Occupational Safety and Health) recommends not using the latex product in food service. Even the glove industry knows this is a problem as they all make non-latex gloves. Nobody will suffer banning latex use in the food industry; however, latex-allergic people will benefit and at risk patrons and restaurant workers may be prevented from developing this allergy and becoming like me. Any risk of transmitting this known, potentially toxic protein, and causing harm is too high.

Thank you for your time.

Mary Catherine Gennaro, DO
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Email: mandy.gen@gmail.com

TESTIMONY RE: H.B. No. 5347
AN ACT PROHIBITING THE USE OF LATEX GLOVES IN FOOD BUSINESSES

My name is Carolyn Mirek. I serve on the Town Council in South Windsor and I have a life-threatening latex allergy. I support Proposed Bill 5347 to prevent others who have a latex allergy or who could develop latex allergy from being exposed to a known allergen without their knowledge. I am grateful for the opportunity to explain why latex-free gloves can protect both consumers and those who work in food establishments.

I was licensed in 1983 to practice dental hygiene after graduating from Northeastern University and Forsyth School for Dental Hygienists. I served as a trustee to the Connecticut Dental Hygienists' Association and was an active member of the Hartford component, later serving as President of the Hartford Dental Hygienists' Association. I have presented lectures to dental hygienists about latex allergy. In 2001 I was disabled from my career as a registered dental hygienist due to latex allergy. I also have permanent partial disability as I may inadvertently have other exposures to latex. Having to change my career was the hardest thing I ever had to do. How could I provide for my family now? My insurance denied my claim. I was forced to fight a long grueling battle culminating in a six day federal jury trial followed by a bad faith claim. First, I had to sue the glove manufacturers to prove their liability. These events were extremely stressful. I went through counseling while mourning the loss of my 18 year career as a dental hygienist. I started fresh, retrained for a career in dental sales, although I must practice strict avoidance of latex. Who knew that the latex gloves that I wore for protection while treating dental patients could cause life threatening anaphylaxis? If I enter a room or business that has latex balloons, I must leave immediately. Latex particles are invisible: I cannot see latex toxins in the air or food.

Here are a few examples of my past latex allergy reactions. In 2001, my family was having lunch at an amusement park in Connecticut. After one bite, my eye swelled shut, and I could not breathe. I saw the box of latex gloves behind the counter. Unprepared, I soon learned that the park was also unprepared- without an emergency kit, Benadryl, or EpiPens. Imagine how frightening that was for my four and six year old children! I knew I was sensitive to latex gloves, but no one ever told me that anaphylaxis could occur from latex touching my food. I had been eating latex without my knowledge, and it could kill me! According to the American Latex Association, latex gloves are dangerous in food preparation since proteins shed from the gloves onto the food. Eating food contaminated with latex proteins can cause anaphylactic shock and possible death in sensitive individuals. At my husband's company party, I ate latex contaminated baby greens and vinaigrette which caused severe nausea, vomiting, diarrhea, swelling, hives, and airway closure. A year ago, one restaurant assured me prior to and reassured three more times that they did not use latex gloves. I had anaphylaxis after one bite of food. Later, the manager admitted, "Oh yes, the chefs did use some latex gloves." In July 2014, I had my most severe reaction ever, and I thought I was going to die. I was transported by ambulance to Saint Francis Hospital.

How many people have latex allergy? The number of people with latex allergy is under reported. Diagnostic tests are unreliable and not standardized in the US. Many family physicians do not realize they need to diagnose latex allergy based on clinical symptoms rather than unreliable and expensive tests. Thus, many people don't know they have it. Many don't know they have it. I, personally, was undiagnosed for many years. When anyone today visits a medical or dental facility they are asked in their medical history if they have a latex allergy. It is common and severe! An estimated 15 million people worldwide suffer from latex allergy. According to The Spina Bifida

Foundation, experts think latex could be a problem for up to 73 percent of children and youth with Spina Bifida. There is a rise in the number of elderly- now 11%. Among the general population it is reported, but probably exceeds up to 6% while healthcare workers it is 10-17%.

Oregon, Rhode Island, Boston, and Arizona have banned latex from restaurants. A restaurant in Manchester, CT recently went latex free because one of their cooks developed latex allergy. Why are food establishments putting their workers at risk when there are several safe and inexpensive alternatives? Restaurant chains such as Subway, Chipotle, Bonefish Grill and some others made a policy not to use latex because it made economic sense and was the right thing to do. However, others have a no-latex glove and utensil policy in food prep, yet allow latex balloons which makes the environment unsafe for the people with latex allergy. I sell gloves for my dental supply company and latex gloves are more expensive now than other types. So why would anyone choose the more expensive, life-threatening kind?

If a food establishment's policy is to wear gloves to protect and prevent cross-contamination; then why is it still happening with latex ones? Latex is proven to transfer and stick to food, glasses, and plates for 24 hours. Latex protein becomes a hidden food allergen. Latex particles from gloves, rubber cooking utensils, and balloons becomes airborne and inhaled. Workers in food service are often unaware of the latex risk and the potentially deadly consequences. Many professionals wear latex gloves today that did not before-such as food service, hair stylists, day care workers, repairmen, and janitors- and they are experiencing a wave of newly developed latex allergy like health care workers experienced since the 1980's.

The food safety manual "The Safe Food Handler" states: "Provide workers with non- latex gloves because latex gloves might cause a reaction in some workers." When some states banned latex glove use in the food industry, a major impetus for this was an increase in workers compensation claims related to latex allergy. Our own CT Department of Public Health website has a section titled "Food Protection." This article provides a link to Centers for Disease Control and Prevention's that since 1997: "Non-latex gloves are recommended for tasks (such as food preparation, routine housekeeping, and maintenance) that are not likely to involve contacts with infectious materials such as blood." Shouldn't the state of Connecticut abide by the CDC, especially if they list it as a reference?

Less expensive, safer alternatives to latex gloves are available. The risk of exposure to this hidden toxin being served to unsuspecting diners, as well as those preparing the food, can be minimized. Latex allergies are real and preventable. Reduce the incidence of increased latex exposure, allergic reactions, workers compensation claims, lost wages, and disability claims. Let's follow the CDC Guidelines on our State of Connecticut Food Protection website.

Thank you for your consideration, and I hope you will support HB 5347.

Sincerely,

Carolyn Streeter Mirek, RDH
48 Sele Drive South Windsor, CT
cmirek@cox.net

References:

http://www.ct.gov/dph/cwp/view.asp?a=3140&q=387486&dphNav_GID=1828

<http://www.cdc.gov/niosh/updates/latexpr.html>

<http://latexallergyresources.org/articles/are-there-hidden-dangers-food-prepared-latex-gloves>

<http://www.latexallergyinfo.com/latexfreerestaurants.htm>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4017681/>

http://www.kintera.org/site/c.liKWL7PLlrF/b.2700271/k.1779/Latex_Natural_Rubber_Allergy_in_Spina_Bifida.htm

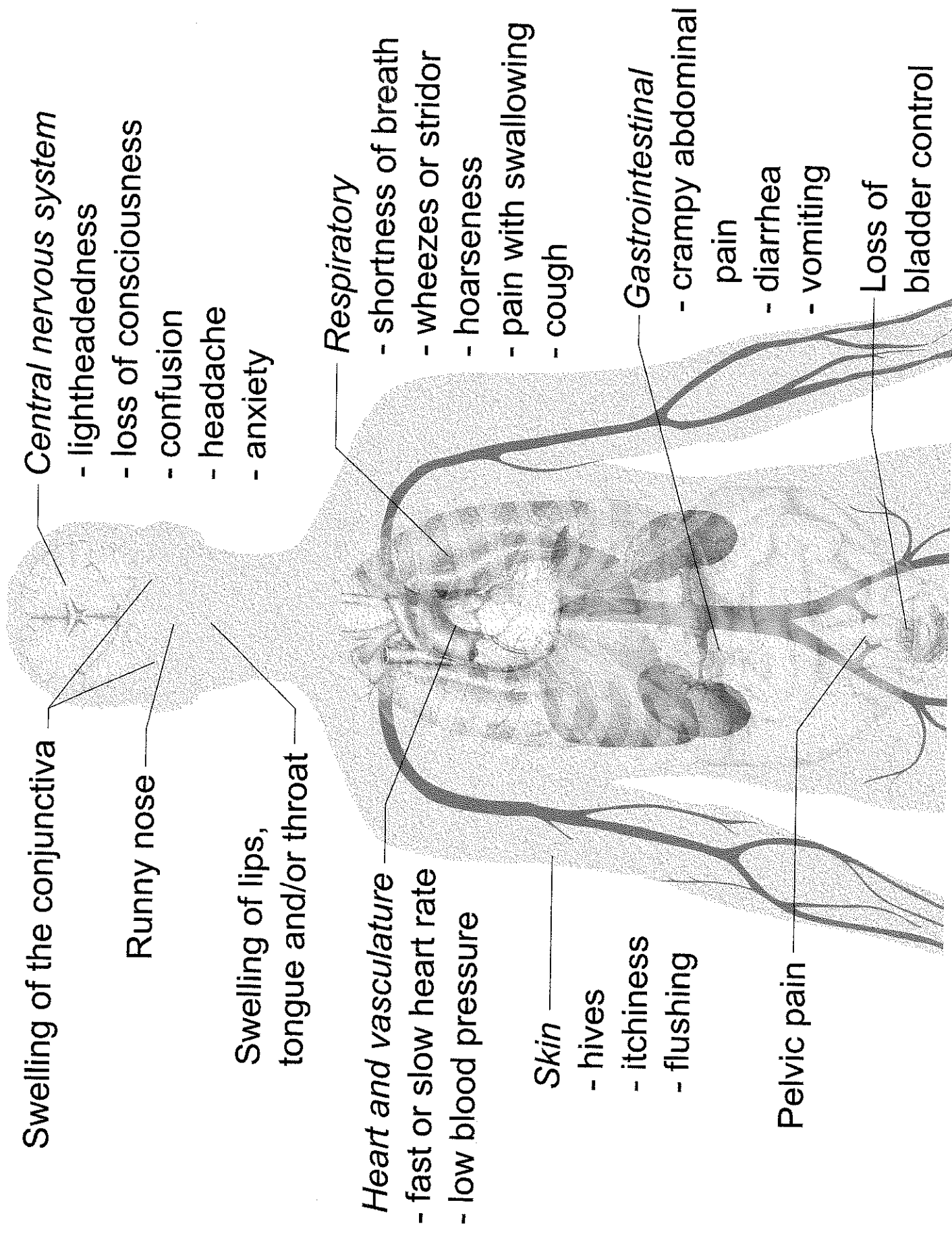
http://www.foodbase.org.uk/admintools/reportdocuments/11_27_Latex_final_report.pdf

http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.fda.gov%2Fohrt%2Fdockets%2F03%2Fslides%2F3977s1_Heumann

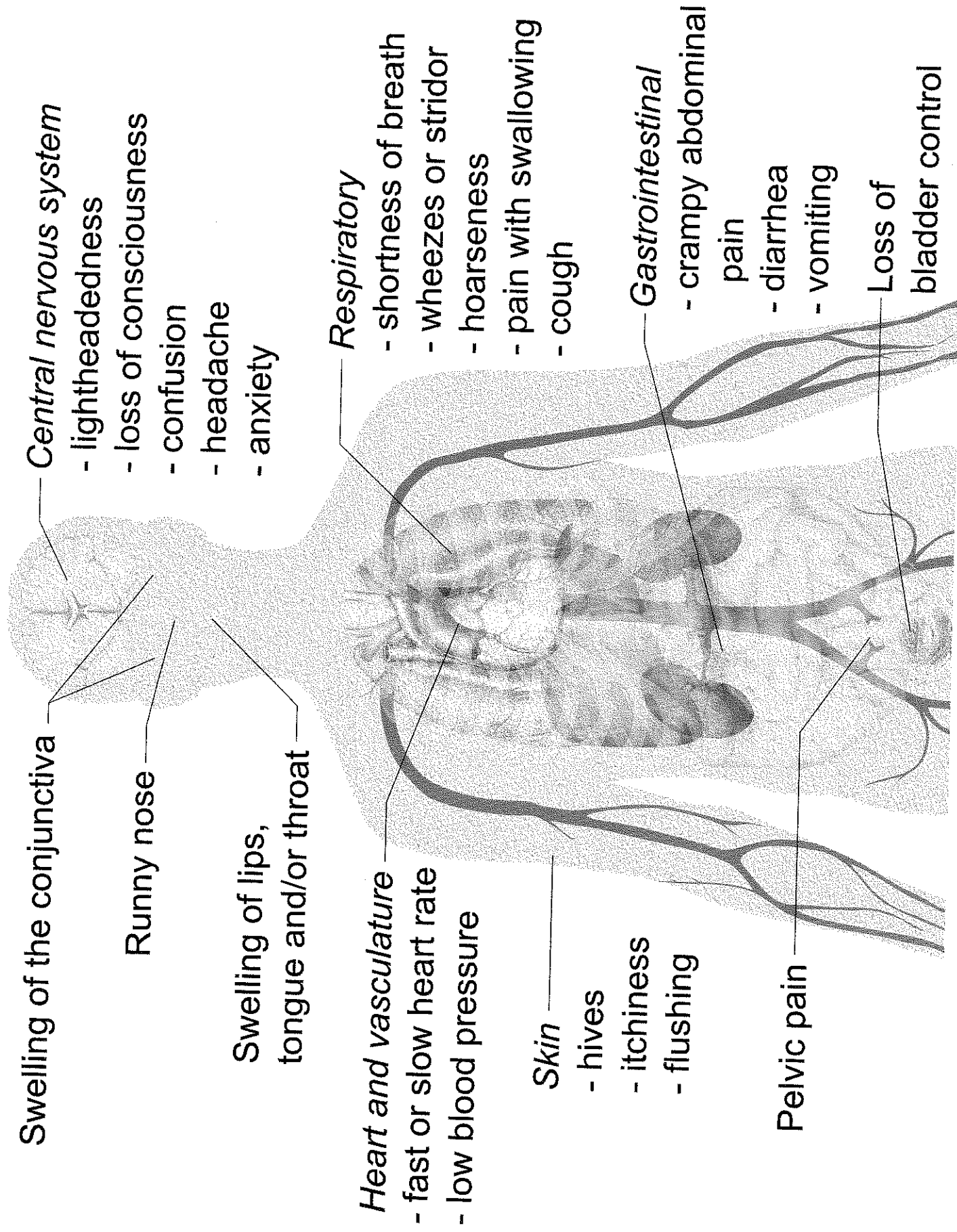
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[siO88nNg_uKsKw&bvm=bv.84349003,d.eXY](http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.fda.gov%2Fohrt%2Fdockets%2F03%2Fslides%2F3977s1_Heumann)

<http://latexallergyresources.org/articles/letter-us-dept-health-and-human-services>

Anaphylaxis



Anaphylaxis



Anaphylaxis (an-a-fi-LAK-sis)

is a serious allergic response that often involves swelling, hives, lowered blood pressure and in severe cases, shock. If anaphylactic shock isn't treated immediately, it can be fatal.

A major difference between anaphylaxis and other allergic reactions is that anaphylaxis typically involves more than one system of the body.

Symptoms usually start within 5 to 30 minutes of coming into contact with an allergen to which an individual is allergic. In some cases, however, it may take more than an hour to notice anaphylactic symptoms.

Warning signs may include:

- Red rash (usually itchy and may have welts/hives)
- Swollen throat or swollen areas of the body
- Wheezing
- Passing out
- Chest tightness
- Trouble breathing
- Hoarse voice
- Trouble swallowing
- Vomiting

10 11

Aloha Representative Aman and the General Law Committee of Connecticut,

My name is Anne Marie Owens Jacintho; I am a resident from Kula Maui, Hawaii.

This testimony is in regards to

HB5347: AN ACT PROHIBITING THE USE OF LATEX GLOVES AT FOOD BUSINESSES

I strongly support HB5347

I am a mother of a 15-year old daughter that has a severe latex allergy. Latex is an airborne pathogen and, like dust, its residue floats in the air and remains on surfaces. She has had reactions from food touched with latex gloves. Upon digesting food that has been touched or exposed to latex her reactions start with a "funny feeling" in her throat and progresses to tongue and lip swelling requiring Benadryl.

My daughter's latex allergy was diagnosed at 2 years of age after a dental appointment; the dentist gloved hand imprint was left on my daughters face in the form of hives wherever the dentist had touched her. There is no cure for a latex allergy, only prevention of future reactions by avoidance of latex. With each latex exposure the person's reaction may increase to the next level. There are over 40,000 latex products in our environment; the American Latex Allergy Association has provided a guide to help a person with a latex allergy to help maneuver through the many latex obstacles in everyday life. <http://latexallergyresources.org/consumer-products>

Latex gloves are a product that is currently very difficult to avoid in restaurants and other food entities such as grocery stores. We've had to leave even a grocery store immediately due to my daughter starting to have a reaction. Once we got to the produce aisle when my daughter's throat started to "feel funny" and her eyes started to itch. Upon looking around we saw that the produce clerk was wearing latex gloves while putting the vegetables in the display bins. We immediately left and administered Benadryl.

Traveling is also difficult. In 2012, my daughter's school went on a national park adventure traveling by plane, car and train throughout the western United States to Yellowstone, Grand Tetons and Yosemite. At that time, the airlines could not guarantee that latex gloves would not be used in the cabin. The airlines instructed me that I could bring latex-free gloves for the flight crew to use while we were on board. They could not guarantee that the food that they were serving would be latex-free, so we took our own. With the TSA restrictions of what you are allowed to carry on board we were limited to dry crackers. Most snacks, energy bars and treats available in vending machines have a latex-based adhesive seal. In order for the adhesive to not touch the treat, a scissors is required to open the package, which was not allowed in our carry-on bag. Being that we traveled from Hawaii we had several stops and connections on different airlines requiring an overnight stop over. The hotel was able to provide a latex-safe room but advised us that the kitchen did use latex gloves. We were unable to eat at the airport as the food vendors also used latex gloves. It was two days before my daughter was able to eat a latex-safe meal at Olive Garden that has a corporate "No latex Glove Use" policy.

One of the stops was to a Six Flags amusement park. It was nice to see the food concessions all used latex free gloves. However, my daughter had a prepackaged Ice cream treat and developed an allergic reaction. My daughter could smell the latex in the wrapper when she took a bite of the ice cream with the open wrapper still attached to the ice cream stick. Her throat started to get tight and her lips and tongue tingled. She required 50 mg of Benadryl and had residual reactions for remaining 3 days of the vacation.

I belong to a latex allergy support group with over 300 members. Daily we hear of a member's story recounting their reactions that they have had from food handled with latex gloves. Even though precautions are taken by screening restaurants carefully on their latex glove use, it is not enough. Food maybe outsourced, or farmers in the field may have used latex gloves while harvesting.

Our family is fortunate that we have a farmer that produces CSA Baskets (produce). He has changed his harvesting practice to accommodate our needs, and has extended it to all his customers. He stopped using latex gloves and rubber bands and only uses twist ties when bundling the vegetables. He said it was a no brainer for him as the safety and wellbeing of his customers always come first. There was no increase in cost of his operating expense; it was just a matter of changing his ordering practice.

The passing of HB5347 is very important. Removing latex gloves and utensils from food service and other food entities will help to remove a substantial risk to a latex allergy sufferer. It will also remove the risk of employees being exposed to the over use of latex and putting them at risk of developing a latex allergy increasing. After all, 1 in every 1000 has a latex allergy.

These are the current latex allergy statistics from the American Latex Allergy Association: it is estimated that...

- 18-73% of people with Spina Bifida
- 38% of dental care workers
- 34% of children who have three or more surgical procedures
- 10-17% of Health care workers
- 11% of rubber industry workers
- 6.8 % of atopic (allergies) individuals
- 8.3% of the general population
- Also recently it was noted that 11% of the elderly also have a latex allergy

<http://www.immunityageing.com/content/11/1/7>

Thank you for this opportunity to share my family's personal experience and encourage your support of HB5347.

Anne Marie Owens Jacintho

880 Naalae Road

PO Box 473, Kula Maui, Hawaii 96790

3 January 2015

RE: Latex Allergy and Latex Anaphylaxis

To Whom It May Concern:

If I may introduce myself: I am Coryne Wong, a registered nurse who practiced for 20 years as a pediatric acute care and pediatric transplant nurse. We knew that patients, such as spina bifidas, needed extra care regarding using latex, as they had hundreds of exposure to latex, including multiple surgeries and catheter usage.

This is not merely a cause, but rather a plea from someone who suffers the repercussions of the exposures, as well as someone who lost dear friends, fellow nurses, due to this environmental hazard.

The current statistics for people sensitized to natural rubber latex are broken down by risk groups and are as follows:

- **8-17% of health care workers**
- **Up to 68% of children with spina bifida (related to frequent surgeries - anyone who has multiple surgeries is at risk)**
- **Less than 1% of the general population in the U.S. (about 3 million people) (1)**
- ✓ **Latex gloves have proved effective in preventing transmission of many infectious diseases to health care workers. But for some workers, exposures to latex may result in allergic reactions. Reports of such reactions have increased in recent years--especially among health care workers.**
- ✓ **NIOSH Publication No. 97-135 (June 1997)**
Detailed description of latex allergy including presentation of existing data and description of six case reports of workers who developed latex allergy. The document also presents NIOSH recommendations for minimizing latex-related health problems in workers while protecting them from infectious materials. (2)

Unfortunately, as an RN, I first developed sensitivity to latex; I now have anaphylactic reaction to this substance. If I may detail just a few of my experiences regarding the above noted subject matter:

- A friend, a pediatric ICU nurse, had "sensitivity" to latex, as later pegged, related to her hospital exposure. She was painting her bathroom; it was latex paint. She died; she was only 33 years old!
- When I went to the dentist, I related many, many times, my anaphylactic reaction to latex. I don't know why they had nitrite and latex gloves, in that nitrite is an effective substitute
 - Twice!!! They used latex, although I asked, questioned, warned, had warnings put in my chart!! Both times they had to use epinephrine on me, in that I stopped breathing. Interestingly, both times they, the doctors, did not know how to use an epi-pen! While gasping for breath, I had to administer it myself!

- Another time my dentist placed a device in my mouth. Before that I asked, again, if it had latex. He stated no. I could not breathe, and once again, I administered my own epi-pen, in that they didn't know what to do. As I was turning blue, the doctor, from what he said, was looking up the device on-line to see if it contained latex!
- During a root canal, again, begged, asked, looked at their gloves, I stopped breathing! After, once again, administering epi to myself, the "assistant" stated that she didn't touch me, she only handed the instruments and devices over to the dentist; she was wearing latex gloves!
- Airborne latex particles are potentially life-threatening!

I am pleased with the progress made regarding having epi-pens in the schools, in that I am also a District Nurse. However, I request:

1. Latex, as feasible, should be banned from medical institutions
2. Education regarding an anaphylactic reaction

I thank you for your time and consideration. Unfortunately, in this ever changing world, inundated by chemicals and other man-made or otherwise overused substances, more and more immune diseases and reactions are becoming apparent and a true health concern. I don't want to lose my life; I don't want anyone else, like my fellow nurse Kelly, to lose theirs.

Sincerely,

Coryne Wong

Coryne Wong, RN, PHN, CSN, DE, PN

(1) <http://latexallergyresources>

(2) Latex Allergy: A Prevention Guide

NIOSH Publication No. 98-113

Questions and Answers about identifying and preventing latex allergy.

NIOSH

ALERT

Preventing Allergic Reactions to Natural Rubber Latex in the Workplace

12

WARNING!

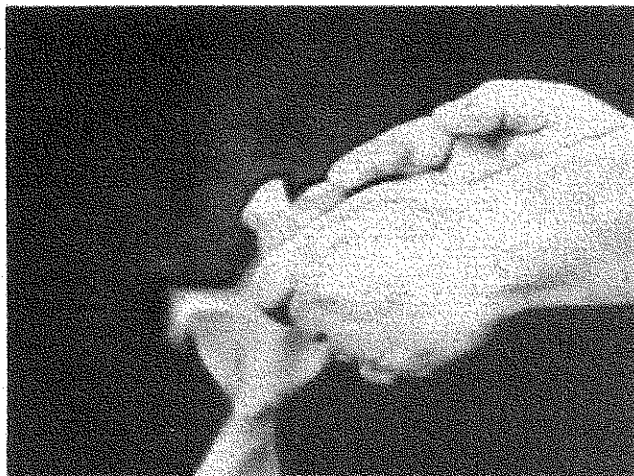
Workers exposed to latex gloves and other products containing natural rubber latex may develop allergic reactions such as skin rashes; hives; nasal, eye, or sinus symptoms; asthma; and (rarely) shock.

Workers with ongoing exposure to natural rubber latex* should take the following steps to protect themselves:

1. Use nonlatex gloves for activities that are not likely to involve contact with infectious materials (food preparation, routine housekeeping, maintenance, etc.).
2. Appropriate barrier protection is necessary when handling infectious materials.[†] If you choose latex gloves, use powder-free gloves with reduced protein content.[‡]
3. When wearing latex gloves, do not use oil-based hand creams or lotions (which can cause glove deterioration) unless they have been shown to reduce latex-related problems and maintain glove barrier protection.
4. Frequently clean work areas contaminated with latex dust (upholstery, carpets, ventilation ducts, and pleenums).
5. Frequently change the ventilation filters and vacuum bags used in latex-contaminated areas.
6. Learn to recognize the symptoms of latex allergy: skin rashes; hives; flushing; itching; nasal, eye, or sinus symptoms; asthma; and shock.
7. If you develop symptoms of latex allergy, avoid direct contact with latex gloves and products until you can see a physician experienced in treating latex allergy.
8. If you have latex allergy, consult your physician regarding the following precautions:
 - Avoid contact with latex gloves and products.
 - Avoid areas where you might inhale the powder from the latex gloves worn by others.
 - Tell your employers, physicians, nurses, and dentists that you have latex allergy.
 - Wear a medical alert bracelet.
9. Take advantage of all latex allergy education and training provided by your employer.

In this warning sheet, the term "latex" refers to natural rubber latex and includes products made from dry natural rubber. Natural rubber latex is the product manufactured from a milky fluid derived mainly from the rubber tree, *Hevea brasiliensis*. CDC (Centers for Disease Control and Prevention) [1987]. Recommendations for prevention of HIV transmission in health-care settings. MMWR 36(S2).

[†]The goal of this recommendation is to reduce exposure to allergy-causing proteins (antigens). Until well accepted standardized tests are available, total protein serves as a useful indicator of the exposure of concern.



Dust produced by removing a latex glove containing powder.

For additional information, see ***NIOSH Alert: Preventing Allergic Reactions to Natural Rubber Latex in the Workplace*** (DHHS [NIOSH] Publication No. 97-135). Single copies of the Alert are available free from the following:

Publications Dissemination, EID
National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226-1998

Fax number: (513) 533-8573
Phone number: 1-800-35-NIOSH (1-800-356-4674)
E-mail: pubstaff@cdc.gov

U.S. Department of Health and Human Services
Public Health Service
Centers for Disease Control and Prevention
National Institute for Occupational Safety and Health

The NIOSH logo consists of the word "NIOSH" in a bold, italicized, sans-serif typeface. The letters are closely spaced, and the overall style is professional and authoritative.



Centers for Disease Control and Prevention
 CDC 24/7: Saving Lives, Protecting People™

13

Latex Allergy

What's the Problem?

People can become sensitized and develop allergic reactions to certain proteins in natural rubber latex, such as that used in gloves and other products. Symptoms include skin redness, hives, and itching; more severe respiratory symptoms such as runny nose, sneezing, itchy eyes, scratchy throat, and asthma; and, in rare cases, shock. Workers who get sick may only be in their 20s and 30s, at the height of their productive lives.

Latex allergy can disrupt careers that represent years of training and hard work. It may result in potentially serious health problems and force the affected person to adopt substantial lifestyle changes to avoid everyday products containing latex - everything from condoms to balloons and children's toys.

Who's at Risk?

Workers in the health care industry (physicians, nurses, dentists, technicians, etc.) are at risk if they use natural latex gloves frequently. So are other workers if they use latex gloves (hairdressers, housekeepers, food service workers, etc.) and employees in industries that manufacture latex products.

At least 7.7 million people are employed in the growing health care industry. While there are no overall statistics on the prevalence of latex allergy in that work force, studies do indicate that 8 to 12% of health care workers regularly exposed are sensitized, compared with 1 to 6% of the general population.

Among groups of sensitized workers, the proportion of those with symptoms of latex allergy varies; one study of exposed hospital workers found that about half of those who became sensitized developed latex asthma.

Can It Be Prevented?

Yes, there are ways to prevent exposure that may lead to sensitization and allergic reaction. Workers choose non-latex gloves when there is little chance they will come in contact with infectious materials (for example, in the food service industry). If latex gloves are chosen as appropriate protection when handling infectious materials, they should be reduced-protein, powder-free gloves.

The challenges to overcoming this problem are many. The number of workers at risk is large. Workers often are unaware of the risk of latex exposure. Well-accepted, standardized methods for measuring allergy-causing latex proteins are not available. No FDA-approved materials are available yet for use in skin testing for latex allergy. Occasionally, additional allergy tests may fail to confirm a true allergy to latex or tests may suggest latex allergy in a worker with no clinical symptoms.

The Bottom Line

- People can become sensitized and develop allergic reactions to certain proteins in natural rubber latex.
- Latex allergy is a serious concern for employers and workers in the growing health-care industry and in other key sectors (law enforcement, fire fighting, and service industries such as food preparation and hair care).
- Symptoms may progress from skin redness, hives, and itching; to more severe respiratory symptoms such as runny nose, sneezing, itchy eyes, scratchy throat, and asthma. In rare cases, latex allergies can result in shock.

On this Page

- What's the Problem?
- Who's at Risk?
- Can It Be Prevented?
- The Bottom Line
- Case Example

Are you a writer or producer working on a current TV or film project? [Contact the program for technical assistance](#) (<mailto:hhs@usc.edu>).

- If latex allergy develops, avoiding contact with latex products is essential, but may be quite difficult.
- Non-latex gloves are the best choice for workers who do not deal with infectious materials. For handling infectious materials, reduced-protein powder-free gloves offer effective protection with decreased risk for latex allergy.

Case Example

Susan, an emergency room nurse, has been developing a rash and sneezing spells while at work. She ignores the problem until one day at work, she is actually gasping for air. After being treated by her colleagues in the emergency room, Susan learns that she has a severe latex allergy that necessitates her having to quit. Even after leaving her job, she finds her family life severely circumscribed by the allergy. "I can't go inside when I take my kids to the dentist's office. When I go to a restaurant, I have to call ahead and see if they use latex gloves."

Related Links

- National Institute for Occupational Safety and Health: Occupational Latex Allergies, CDC (<http://www.cdc.gov/niosh/topics/latex>)
- The National Institute for Occupational Safety and Health Information Line (800) 356-4674
- ALERT (Allergy to Latex Education & Resource Team Inc.) (414) 677-9707

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Latex Protein: A Hidden "Food" Allergen?

Donald H. Beezhold, Ph.D., Jennifer E. Reschke, Jennifer H. Allen, David A. Kostyal, Ph.D., and Gordon L. Sussman,* M.D.

ABSTRACT

Avoidance of latex allergens is the primary method to prevent adverse reactions. Natural rubber latex is found in many different products in both the health care industry and in modern society, and consequently results in unexpected exposures of sensitized individuals. The use of latex gloves by food handlers provides one potential route for inadvertent exposure to latex allergens. In this study we have used two immunological methods to determine whether latex proteins are transferred to foods following contact with latex gloves. Direct transfer of latex protein to cheese was visualized using a modified immunoblot method. Sliced cheese was touched with a gloved finger. A nitrocellulose membrane was applied to lift the potential fingerprints and a rabbit anti-latex antiserum was used to visualize the transfer of any latex fingerprints. After handling lettuce with gloves, transferred protein was recovered by extracting the lettuce and quantified using an inhibition ELISA for latex proteins. Fingerprints of latex protein were readily detectable on cheese after contact with powdered latex gloves, but not with vinyl gloves. Furthermore, powdered latex glove use resulted in measurable amounts of latex protein on lettuce with an exposure-dependent increase in the latex protein levels. Lettuce alone or lettuce handled with vinyl gloves was negative for latex protein. The use of latex gloves by food handlers is the source of an indirect food additive in the form of latex proteins. It is recommended that food handlers avoid the use of

latex gloves to eliminate inadvertent exposure of latex-sensitive individuals. (Allergy and Asthma Proc 21:301-306, 2000)

Immediate hypersensitivity reactions to natural rubber latex (NRL) have become a serious risk, particularly to health care workers (HCW) and to certain patient groups who undergo frequent medical procedures, such as patients with spina bifida (SB). The prevalence of latex sensitization in HCW is between 5 and 17%¹⁻³ and 50% or greater in SB patients.⁴ Allergic reactions to latex gloves range from delayed-type hypersensitivity reactions² to IgE-mediated type I hypersensitivity reactions.^{1,2} Studies have shown that residual proteins on latex devices cause the IgE-mediated allergic reactions.⁵⁻⁹ Residual protein levels on gloves vary considerably, but in general, powdered gloves have significantly more antigenic protein than powder-free gloves. In addition to the critical requirement for the exclusive use of synthetic gloves, additional protective measures may be necessary for some individuals practicing latex avoidance.

Avoidance is the best method to prevent adverse reactions to latex, but this can be a difficult task. NRL is present in many different products in both the health care industry and the home, resulting in unexpected exposures of sensitized individuals.¹⁰⁻¹⁴ The powder on gloves serves as a vector for latex protein that can be carried in the air and/or on clothing, resulting in the inadvertent exposure of individuals practicing latex avoidance.¹⁵⁻¹⁷ Furthermore, cross-reactivity to certain foods makes avoidance of those foods necessary for clinically reactive patients.¹⁸ The presence of cross-reacting foods is further complicated by the use of latex gloves by food handlers. Anecdotal reports have been made of reactions to foods not suspected of being cross-reacting, but because the foods were handled with latex gloves.¹⁴ Although it is quite conceivable that latex protein could contaminate foods when food handlers wear latex gloves, the contamination of food with latex protein has not been documented. In this study we have used two different laboratory methods to demonstrate that contact of foods by

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latex gloves results in contamination of the foods with latex protein. The data demonstrate that the contamination can be considerable. We were able to show contact-dependent increase in the transferred protein levels by inhibition ELISA.

MATERIALS AND METHODS

Gloves and Reagents

Eight brands of gloves were screened for protein levels by ASTM D5712 Lowry assay, and an inhibition ELISA before analysis for protein transfer to foods. The brand of latex gloves chosen for use (E1) was powdered examination gloves containing 258 $\mu\text{g/g}$ of total protein and 22.9 $\mu\text{g/gm}$ of antigenic protein. Two brands of vinyl gloves were used as negative controls. Lettuce and sliced processed cheese were purchased locally.

Experimental Protocol

The experiments were designed to simulate the contact of foods by food handlers' gloves. The hands were thoroughly washed before donning to assure that no latex protein was present on the hands before starting the experiment. Typically, powdered gloves have more protein on their inner surface (average 63% of total, $n = 11$ brands, range 17–97%) than on their outer surfaces. Brand E1 had ~80% of its total protein on the inside surface of the gloves, therefore the gloves were donned inside out to make it easier to detect the protein. Contact with gloved fingers was made with cheese (single fingerprints) and lettuce (multiple contacts) and the foods were processed for the immunological detection of latex protein.

Visualization of Protein Transfer

The transfer of protein by contact of latex gloves with the cheese was visualized using the fingerprint assay,¹⁹ a modified Western blot immunoassay. The assay was performed by gently pressing a gloved finger for 3 seconds to a slice of processed cheese and repeating for a total of four prints. A dry nitrocellulose membrane was carefully placed on the cheese for 30–60 seconds to "lift" the prints from the food. The nitrocellulose was then moistened and separate lanes touched with latex gloves directly as a positive control or synthetic gloves as a negative control. After all prints were made, the membrane was washed with T-PBS, blocked with 10% nonfat dry milk, and incubated overnight with a 1/10,000 dilution of rabbit anti-latex protein antiserum. The membrane was then washed with T-PBS and incubated for 1 hour with a 1/2000 dilution of alkaline phosphatase-labeled goat anti-rabbit antiserum (Promega, Madison, WI). Protein transfer was visualized by development in NBT/BCIP substrate (Promega).

Inhibition ELISA for Latex Protein

The transfer of latex protein to food was quantitated using a competitive inhibition assay (ASTM 6499-00). A small piece of lettuce was manipulated while wearing

gloves and the number of finger contacts recorded. Vinyl gloves served as a negative control. The lettuce was placed in a 50 mL polypropylene tube and extracted with 5 mL of PBS. The extract was then tested for latex protein using an inhibition ELISA.²⁰ The inhibition step was carried out in low-

protein-binding microtiter plates by first blocking the plates with 300 μL of 3% nonfat dry milk/PBS overnight at room temp. Seven twofold dilutions of each extract (100 $\mu\text{L}/\text{well}$) and seven twofold dilutions of an ammoniated latex (AL) reference protein beginning at 2 $\mu\text{g/mL}$ were made in the blocked low-protein-binding plate. Rabbit anti-latex serum (1/15,000 dilution) was added to each sample dilution (100 μL) before incubating the plates for 2 hours at 37°C. Solid phase antigen was prepared by coating the wells of a 96-well polystyrene ELISA plate (Maxisorb, Nunc) with 0.3 $\mu\text{g}/\text{well}$ of AL protein in carbonate buffer pH 9.6 for 2 hours at 37°C. Solid phase antigen was washed $\times 3$ with phosphate buffered saline containing 0.05% Tween 20 (TPBS), after which the non-reacted sites were blocked for 1 hour with 3% nonfat dry milk/PBS and washed two times with TPBS.

After the 2-hour incubation to allow antibody recognition, samples (100 $\mu\text{L}/\text{well}$) were added to the 96-well plates containing the solid phase antigen and incubated for 2 hours at 37°C. The plates were washed $\times 3$ with TPBS and reacted with a 1/5000 dilution of peroxidase-labeled goat anti-rabbit IgG (Sigma, St. Louis, MO) for 1 hour at 37°C. After washing the plates $\times 3$, a colored reaction was produced by the addition of *o*-phenylenediamine (1 mg/mL) in H_2O containing 0.1% H_2O_2 . The reaction was stopped by the addition of 50 $\mu\text{L}/\text{well}$ of 4 N sulfuric acid. The reaction product was quantified by reading the optical density at 490 nm using an MR 5000 ELISA plate reader (Dynatech, Chantilly, VA). The concentration of latex protein in extracts was determined by comparing the optical density of unknowns to the AL reference standard at three consecutive dilutions using a customized computer spreadsheet and expressed as mass protein per mL of extract. The inhibition assay has a linear working range between 30 and 2000 ng/mL and was recently approved (Dec. 1999) as an ASTM standard assay (D6499-00).

RESULTS

Case Report

A 29-year-old female dental hygienist was diagnosed with latex allergy in 1994 with a positive history and latex skin test. Her symptoms included contact dermatitis, urticaria, occupational rhinoconjunctivitis, and asthma. She has continued to work but wears non-latex gloves and a mask. She had no history of food allergy prior to her latex allergy, but was skin test positive to potato and negative to other foods, including lettuce. She reported no clinical reactivity to foods.

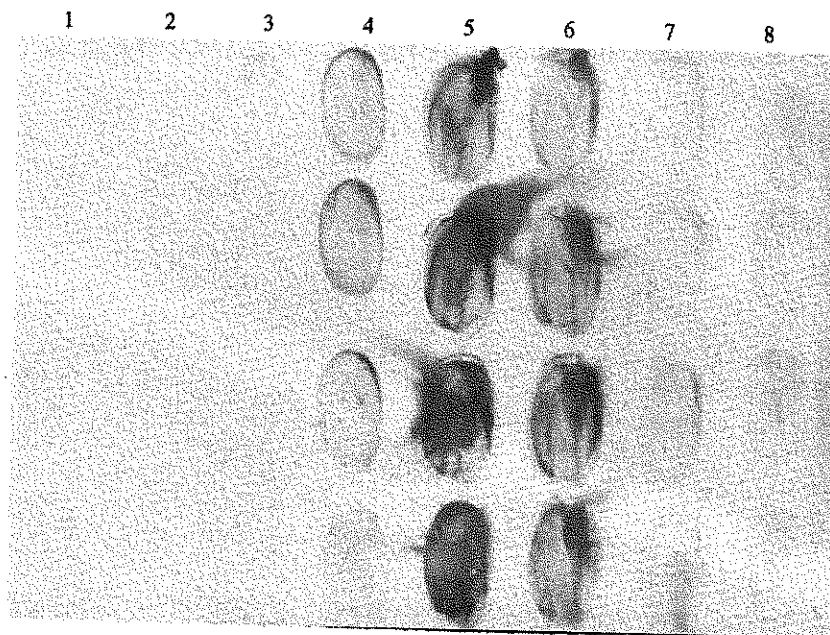


Figure 1. Finger print analysis for latex protein transfer from eight brands of gloves. Lane 1: vinyl glove A; lane 2: vinyl glove B; lane 3: powder-free surgical glove C; lane 4: powdered exam glove D; lane 5: powdered exam glove E1; lane 6: powdered exam glove E2; lane 7: powdered exam glove E3; lane 8: powdered exam glove E4.

data offer direct experimental evidence that latex proteins are easily transferred from gloves to foods.

In this study we chose gloves with a significant amount of protein to enhance our ability to detect the protein. The gloves we used had 258 $\mu\text{g/gm}$ of total protein, which is

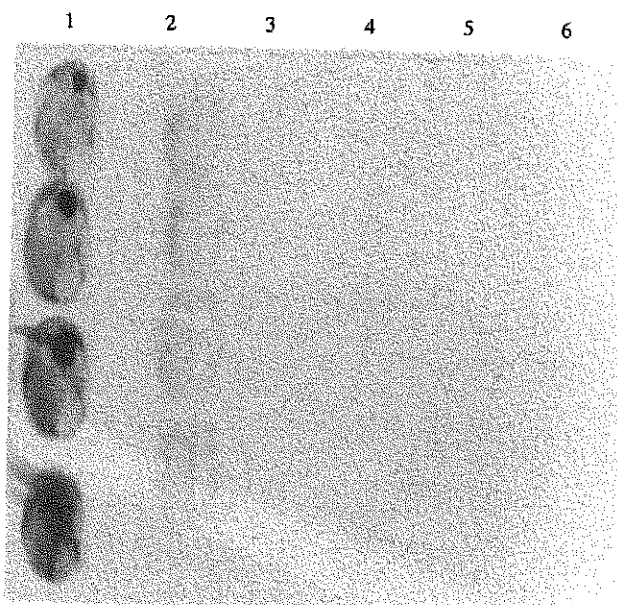


Figure 2. Transfer of latex protein to sliced cheese. Lane 1: glove E1 applied to membrane; lane 2: glove E1 applied to cheese and transferred from cheese to membrane; lane 3: vinyl glove A applied to membrane; lane 4: vinyl glove A applied to cheese and transferred from cheese to membrane; lane 5: vinyl glove B applied to membrane; lane 6: vinyl glove B applied to cheese and transferred from cheese to membrane.

slightly higher than the proposed limit of 200 $\mu\text{g/gm}$ that is under consideration by the FDA as a maximum amount of protein on medical gloves.²² Currently, many powdered gloves exceed this level of protein.²³ Vinyl gloves showed no detectable antigenic protein and no transfer of latex protein to the foods; however, one brand tested did have a protein reading in the Lowry assay indicating these gloves may contain residual chemicals that cause interferences in the Lowry assay. We were unable to determine whether residual chemicals are also transferred to food.

We have used the fingerprint assay to demonstrate protein transfer from both the inside and outside surfaces of gloves and that transfer to the hands could be prevented by an impervious glove liner.^{19,24,25} In this study we used the gloves inside out to enhance the detection of protein. Our previous data indicate that if the glove were donned normally, the primary difference would be in the amount of protein that was transferred. Likewise, we did not perform our experiments with powder-free gloves because the lower amounts of protein on these gloves would make detection difficult.²⁵ However, it is reasonable to assume that lesser amounts of protein are also transferred from these gloves. It is not known how much latex protein is necessary to induce a reaction in a sensitized person, but as little as 70 pg/mL can induce a reaction on skin prick testing.^{26,27} In the present study we found an average of 50 ng transferred to lettuce per single finger contact. Because the level of sensitivity varies from patient to patient, all contact of food with latex gloves should be avoided.

Food handlers' gloves are not regulated by the FDA as medical devices, but fall under the Title 21 CFR 177.2600 regulations. These regulations control materials that are

TABLE II

Amount of Antigenic Latex Protein Transferred		
Glove Brand and Number of Contacts	Total Antigen Detected (μg)	Amount per Contact (μg)
E1, 100	8.76	0.088
E1, 80	6.60	0.083
E1, 60	4.62	0.077
E1, 40	2.94	0.074
None, 0	b.d.	—
A, 100	b.d.	—

Lettuce was handled while wearing gloves, recording the number of finger contacts. The control extracts of lettuce alone (0 contacts) or lettuce with 100 fingerprints from vinyl gloves (Brand A, 100 contacts) were below the detection limit (b.d.) of the inhibition ELISA assay ($0.015 \mu\text{g}/\text{mL}$). Data represent a single experiment.

food contact surfaces that may result in indirect additives to the food. This regulation specifies manufacturing limits on many different rubber polymers and chemical ingredients to rubber materials that may contact food. Components of food processing equipment manufactured from synthetic rubber, such as butyl rubber, do not pose a risk for patients allergic to natural rubber proteins. This regulation does not recognize or propose limits on NRL proteins. Although food processing equipment could have NRL components, much of the latex allergen is presumably removed during routine cleaning of the equipment. The danger with latex glove use by food handlers is that the food is contaminated just before consumption.

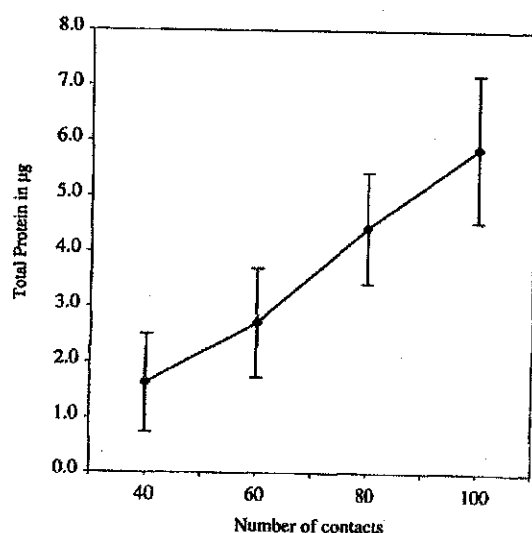


Figure 3. Latex protein level detected after handling a piece of lettuce while wearing latex gloves as described in Table II. The number of times gloved fingers (glove E1) contacted the lettuce was recorded. Lettuce was extracted in 5 mL PBS and the total amount of latex protein determined using the inhibition ELISA. Data represent mean \pm SD from three separate experiments.

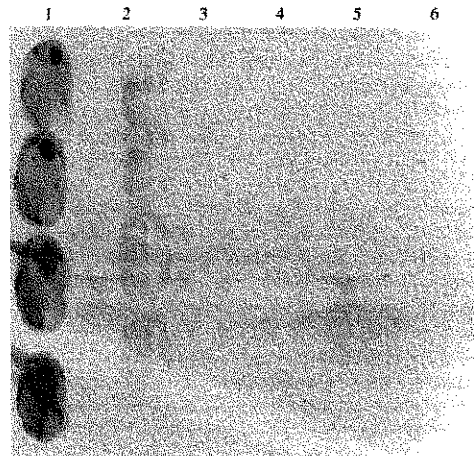
In this paper we have demonstrated that latex protein is an indirect food additive as a result of direct contact with food handlers' latex gloves. Although medical gloves are regulated and current proposed changes may limit the amount of protein on gloves, food handlers' gloves are not included in the proposed regulations. Because latex protein can readily be transferred to food, it is recommended that food handlers avoid the use of all types of latex gloves to eliminate inadvertent exposure of latex-sensitive individuals. Gloves should not be a substitute for proper hand washing and, in fact, proper hand washing may be preferable to the use of gloves in the restaurant industry. When food handlers are required to wear gloves, the gloves should be vinyl or polyethylene to avoid food contamination with latex allergens.

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Hidden Food Allergen



Source: Latex Protein: A
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General Interest

Latex Glove Use by Food Handlers: The Case for Nonlatex Gloves

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ABSTRACT

There is increasing concern that continued exposure to latex products can predispose individuals, particularly those who are atopic (allergy prone), to latex allergy. Latex allergy as a serious hazard has been well documented in the health care industry. There are also well-documented cases of food handlers who have had allergic reactions after the use of latex gloves. The contamination of food with latex proteins by food handlers using latex gloves can also result in potentially severe allergic reactions in latex-allergic consumers. We review latex allergy and present the case for avoiding latex glove use by food handlers in the food and hospitality industries. Adopting the use of nonlatex gloves has benefits for workers, consumers, and the food industry.

Latex allergy is recognized as a serious problem among health care workers and patients. Some studies have reported that up to 25% of atopic (allergy prone) health care workers became sensitized to latex during the course of their work (32, 35). Similarly, children with spina bifida are reported to become allergic to latex because of early exposure to latex and multiple surgical procedures (2). In one such study, 32 (40%) of 80 children with spina bifida had levels of immunoglobulin E to latex of more than 0.7 kU/liter (2).

Other occupational groups experiencing an increased risk of sensitization with exposure to latex include janitors, construction workers, those in the sex industry, and food workers (11, 48). However, in contrast to the health care industry, latex allergy in other occupational groups has not been systematically studied. Here we review latex allergy and present the rationale for advocating synthetic gloves in the food industry.

LATEX PRODUCTION: HISTORICAL BACKGROUND

The rubber tree, *Hevea brasiliensis*, may have been discovered by early Mayan Indians. It was found again in Brazil in the 19th century. From there it was exported to the Kew Gardens in London in the 1880s, and then to Sri Lanka, Singapore, and Malaysia. Although the tree was not native to Asia, it thrived, and large tracts of rain forest were cleared for rubber plantations in the first half of the twentieth century.

Charles Goodyear, Nathaniel Hayward, and Thomas

Hancock are credited with the discovery of vulcanization (34): when the sap from the tree is heated, it becomes less sticky and develops the elastic properties that we associate with rubber.

Rubber manufacture is a complex process. The sap from the tree is first collected by cutting the bark, a task undertaken by workers known as rubber tappers. Ammonia is placed at the bottom of the collecting vessels to prevent coagulation. The resulting liquid latex is subsequently processed with the addition of multiple chemicals and heating. This allows cross-linking of the *cis*-1,4-polyisoprene rubber polymer, which is what gives the latex the characteristic elastic and tensile properties. Because of this complex process, latex products contain a large number of added chemicals as well as proteins from the rubber tree sap. Several of these proteins are the triggers for allergic reactions to latex (43).

THE ADVANTAGES OF LATEX

The use of gloves in surgery is a long-established practice to prevent infection of both the surgeon and patient with each other's pathogens. For surgeons, latex gloves have several advantages. The tensile properties allow freedom of movement. Latex gloves also have excellent tactile properties and are less prone to developing microtears compared with vinyl gloves with prolonged usage (26). Therefore, surgeons are less likely to be exposed to pathogens, particularly during longer operations.

THE DEVELOPMENT OF SYNTHETIC ALTERNATIVES

The major impetus for the development of synthetic rubber was the Japanese invasion of Southeast Asia in

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World War II. Rubber from these areas was no longer available to the rest of the world. As a result, many latex alternatives were developed to assist the war effort.

Synthetic alternatives to rubber gloves include neoprene and polymers such as polyvinylchloride. Nitrile gloves, which are increasingly used in some industries, appear to have tensile properties superior to those of vinyl gloves (42). One recent study assessing examination gloves found that nitrile gloves had fewer preexisting pinhole defects compared with latex gloves (36). In another comparison of puncture resistance and flexibility, nitrile gloves were found to be comparable to latex, although the latex gloves resealed more effectively after puncturing. These gloves were available at a reasonable cost and were considered a suitable alternative for those health workers who have sensitivities to latex proteins (37).

However, some alternatives to latex gloves have disadvantages. They are mostly petroleum based, and some brands are more expensive than latex gloves. Secondly, they may be less biodegradable, and incineration can produce toxic fumes (7). It is also important to note that some synthetic gloves may have latex, which is added to enhance the tensile properties of these products (17); the risk for latex sensitization by hybrid gloves needs further investigation.

THE RECENT HISTORY OF LATEX ALLERGY

After the HIV/AIDS epidemic in the early 1980s, the Centers for Disease Control and Prevention issued guidelines for universal precautions to reduce the risk of transmission of the virus. As a result, there was a dramatic increase in latex glove usage (44).

By the mid 1980s, latex allergy was recognized as a major occupational hazard for health care workers and patients (20). As indicated above, up to 25% of atopic health care workers developed latex sensitization (35). Earlier studies identified increasing risk of latex allergy among susceptible children with spina bifida because of multiple operations and exposure to other latex products such as catheters (2). Recent data suggest that up to 10% of children with eczema are at risk of latex sensitization (23).

The explanation for the rapid increase in latex allergy is uncertain (34), but several possible explanations have been offered (6). Due to increased demand for latex gloves in the 1980s and 1990s, manufacture occurred in many poorly regulated latex factories (6). There is a suspicion that some of these manufacturers released large quantities of poor-quality latex gloves into the market because of the sudden commercial opportunity.

Second, there was a change in manufacturing location from areas where latex was used, to countries where latex was produced. Prior to relocation of these factories, liquid latex was transported in vats containing ammonia. This process took several months, and it may have enhanced hydrolysis of latex proteins (34). When there was a shift of manufacture to countries where latex was produced, the exposure time to ammonia was reduced.

Last, changes in latex processing and use of trees with high-latex yields may have contributed to the allergenicity

of latex products. These possibilities are not mutually exclusive, as there are no systematic studies of the allergens in different latex glove brands before 1987. Increased usage (34), in addition to increased awareness and diagnosis, is likely to have contributed to the apparent increased burden of latex allergy.

Adverse reactions to latex can take several forms (15, 46). Type I hypersensitivity reactions occur when patients generate immunoglobulin E antibodies to latex proteins. Some of those patients sensitized can develop life-threatening anaphylaxis on re-exposure to latex. These individuals can be identified by skin or radioallergosorbent testing and in some cases, by latex challenge in specialized settings.

People with latex allergy are also at increased risk of reacting to certain foods such as avocados and bananas (31). This is thought to be due to cross-reactivity between chitinase, a defense-related protein in fruits, and the Hev b6 protein in latex (44). The allergenic proteins are structurally very similar, even though they are not botanically related (8). Other common foods that have been implicated in cross-reactions with latex proteins resulting in allergic reactions are kiwifruit, chestnut, potato, tomato, and papaya (49). There are reports of many other foods, which also have the potential to cross-react with latex.

Other people can develop type IV contact sensitivity reactions to latex (19). It is thought that these individuals react to some of the chemicals such as thiurams and carbamates, which are added during the latex production process. These patients can be identified by patch testing.

People who wear latex gloves are also at risk of irritant dermatitis caused by poor or excessive hand washing or not drying their hands before and after glove usage. It is very important to distinguish these different reactions, as both the prognosis and implications for prevention vary (22).

POWDERED LATEX GLOVES

The addition of cornstarch is a major risk factor for latex sensitization and allergic reactions (30). Cornstarch is added to make the donning of gloves easier in some contexts, e.g., the health care industry. It is thought that cornstarch particles become airborne and carry latex proteins, which allows sensitization via the respiratory tract (3, 47).

Studies have shown that the use of powdered latex gloves is associated with much higher levels of airborne latex protein (4). The most convincing evidence for the allergenicity of powdered latex gloves comes from a large study in Germany, in which reduction in use of powdered latex gloves was associated with a concomitant reduction in the reported systemic reactions to latex (1).

LATEX IMMUNOTHERAPY

Continued sensitization to latex can be prevented through the avoidance of latex exposure. There has been interest in latex-specific immunotherapy (generally involving periodic exposure to latex allergen by subcutaneous injection), although results for efficacy and safety from clinical trials have been inconsistent (41). There is a risk of significant allergic reactions during these procedures. Re-

TABLE 1. *Advantages and disadvantages of latex gloves and alternative synthetic gloves*

NRL ^a gloves		Synthetic gloves	
Advantages	Disadvantages	Advantages	Disadvantages
Reduced risk of transmission of viruses (HIV)	Irritant dermatitis caused by poor hand washing practices	Reduced risk of transmission of viruses (HIV)	Irritant dermatitis caused by poor hand washing practices
High degree of puncture resistance	Susceptible individuals risk sensitization to latex proteins: after wearing latex gloves, after treatment by a health professional wearing latex gloves, by consuming food handled by a wearer of latex gloves	Susceptible individuals are not exposed to latex proteins	Less biodegradable than NRL gloves
Seal after puncturing		Similar cost to NRL gloves (nitrile gloves)	
Reasonable cost		Tensile properties similar to NRL	
Good tensile properties			

^a NRL, natural rubber latex.

cently an alternative to conventional immunotherapy has been investigated in Europe (13). The administration of latex allergen sublingually may offer reduced risk of adverse reactions; however, extensive clinical trials are still required to prove efficacy and safety (33). This form of immunotherapy is not approved in the United States (13).

HYPOALLERGENIC LATEX GLOVES

Latex proteins that trigger type I hypersensitivity reactions are not required for the tensile properties of latex gloves. Attempts are being made to degrade these proteins during the manufacture of latex products (38). The addition of alcalase may reduce latex proteins in gloves (16).

A 2-year study of the use of powder-free, low-natural rubber latex (NRL) allergen gloves identified improved satisfaction in healthcare workers, a large reduction (approximately 50%) in reportage of symptoms to NRL, and significant cost savings (25). This observation is supported by a systematic review suggesting the use of nonlatex gloves prevents sensitization in health care workers (28).

There is still considerable variation in latex glove quality (21, 24). In a survey of gloves used by health care workers for either examination or surgery in Singapore (24), examination gloves had higher NRL allergen content than surgical gloves had (24). These data highlight the problem with variable glove quality. A summary of the advantages of nonlatex gloves over latex gloves is presented in Table 1.

Assessment of allergenic material in gloves may be possible, and cutoff levels have been investigated (39). Large-scale, long-term studies may be needed to quantify risk of sensitization, based on NRL allergen levels in gloves. Levels of NRL allergenic proteins are currently not routinely stated for gloves. As all latex gloves are potentially allergenic, the U.S. Food and Drug Administration, Center for Devices and Radiological Services does not allow the use of the label "hypoallergenic gloves" on any latex products sold in the United States (14).

Because of the significant increase in the occurrence of latex allergy, several U.S. hospitals are actively pursuing a latex-free policy (9), even though latex may have some advantages over some varieties of synthetic gloves for surgeons.

WHAT ARE THE RISKS FOR THE FOOD INDUSTRY?

Glove use is common among food handlers to prevent pathogen contamination of food. With increased exposure, there are greater risks for both handlers and consumers of developing latex allergy. Several case reports of severe reactions to latex in chefs and other food handlers have been documented (27, 45). These workers, particularly those who are atopic, may be at increased risk of latex sensitization and allergy. One Spanish study suggested that latex allergy might be as common among food workers as health care workers (48).

In addition to the occupational safety and health risks for food workers using latex gloves, there is mounting concern that food consumers with latex allergy are at increased risk of allergic reactions. Food contamination with latex proteins from gloves can occur during processing or food service practices. One study demonstrated that cheese handled by a worker wearing latex gloves had significant levels of latex proteins (5). In a case study of a child who had an anaphylactic reaction after consuming a doughnut, latex proteins were identified as the trigger (8).

While establishing cause and effect in such instances is challenging, the role of latex as an avoidable food allergen justifies precautions similar to those being taken in the health care industry.

The U.S. Food and Drug Administration convened in a meeting in 2003 (12) to examine the evidence that latex allergens from food handlers' gloves could trigger allergic reactions in susceptible consumers. It was accepted that there was a risk, albeit slight, of such reactions. The panel called for further studies including double-blind threshold studies to determine the level of risk to consumers. We have not been able to identify any studies that have examined the threshold of transferred latex allergens that might cause allergic reactions in susceptible consumers.

POLICY RELATING TO GLOVE USE

The marginal advantages of latex gloves in the health care industry are not applicable to the food industry. In contrast to surgeons, the barrier and tensile properties of latex are less critical for food workers. Policies on the use

of gloves in food handling have evolved more from a sense that "glove use results in safer food." The development of safe food handling practices throughout food manufacturing and food service industries should incorporate the principle of hazard analysis and critical control point system. This approach identifies microbiological, physical, and chemical hazards across the spectrum of the food production and distribution pathway and implements control measures to reduce these risks.

The Codex Alimentarius (an international food standards code) does not include guidelines for the use of gloves by food handlers (10). A number of issues have been identified by the U.S. Food and Drug Administration, Center for Food Safety and Applied Nutrition for the appropriate use of gloves as a barrier to bare-hand contact with ready-to-eat food. These include adequate hand washing before and after wearing, the type of material used in the glove and its durability (18). In the absence of specific policies discouraging the use of latex gloves, food safety control plans need to consider the hazard of allergic reaction among latex-allergic consumers exposed to latex-glove-handled food.

Policies relating to glove use must also consider the availability, cost, and biodegradability of glove components, and ensure that recommendations do not put at risk the basic tenets of food hygiene. In particular, clear messages regarding the appropriate handling of foods and use of barrier protection where relevant should remain paramount. An intervention study from a food court in Victoria, Australia, has shown that food handling practices can be effectively managed to minimize the use of latex glove while still safeguarding good food hygiene procedures (29).

Because of increasing concern, the Centers for Disease Control, National Institute for Occupational Safety and Health has recommended that workers in the food industry use synthetic gloves (40). Several U.S. states such as Oregon have banned latex glove use in the food industry. The major impetus for this has been an increase in workers compensation claims related to latex allergy. Others such as New York require signage indicating that latex is being worn by food workers.

Given the availability of less allergenic alternatives that would place both workers and susceptible consumers at reduced risk of significant reactions, we believe there is a compelling case for using nonlatex gloves in the food industry when glove usage is considered necessary.

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Latex Allergy

Anthony R. Ricci, MD

When Christopher Columbus visited Hispaniola in 1496, he observed people playing games with bouncing balls. Returning to Spain with the rubber balls, Columbus related how people of the New World made balls from the liquid of a tree.¹ For three centuries, rubber remained an unstable product until, in 1839, it was discovered that the elastic properties of rubber could be made more permanent through treatment with sulfur and heat.² Most of the world's rubber comes from the tree *Hevea brasiliensis*. When its bark is cut, liquid latex is released.

The rubber trade began in the Amazon basin, but Southeast Asia is the predominant manufacturer of the latex used in most of the world's 44,000 rubber latex products (e.g., tires, footwear, belts and hoses, medical devices, wire cables, balloons, condoms, diaphragms, rubber gloves, nipples for baby bottles and pacifiers).

Latex balloons, gloves, and condoms are made by a dipping process. Very soft products manufactured by dipping have the highest amount of latex proteins and, therefore, are the most allergenic. Cornstarch powder is applied to the molds during manufacturing to prevent stickiness. Water soluble latex proteins, which adhere to the cornstarch particles, can be aerosolized upon removal of the latex glove.³ These particles can sensitize nearby persons or evoke symptoms in previously sensitized people.⁴

Respirable particles can also be shed from powder-free latex gloves.⁵ High exposure areas include operating rooms and labor and delivery suites. Sensitized individuals can become symptomatic after exposure. Some manufacturers of surgical and household gloves also compound casein into the glove. This may cause skin reactions in milk-sensitive persons.⁶

Latex allergy is a hypersensitivity to the substance obtained from the milky sap of the rubber tree. The sensitized person reacts in an exaggerated manner to a harmless substance (an allergen or antigen). A latex allergic person can have a reaction to the chemical additives used in manufactur-

ing the products or to the latex plant proteins themselves. IgE antibody is produced when the immune system detects an allergen. Histamine and other chemical mediators are released, causing erythema, pruritis, rhinorrhea, hives, rash, and watery, edematous eyes. This can swiftly progress to anaphylaxis with labored breathing, a precipitous drop in blood pressure, rapid pulse, tissue edema and death.

The AIDS epidemic and subsequent universal precautions have spurred the use of latex products. The incidence of latex allergy, as with most allergies, increases with chronic exposure.

In 1987, 1 billion gloves were imported into the United States; the following year, the number burgeoned to 8 billion!⁷ Occupations outside of health care also expose workers to the latex protein. One glove manufacturing plant reported a 3.7% prevalence of occupational asthma caused by latex allergy.⁸ Workers in latex doll manufacturing plants have higher prevalence of latex sensitization.⁹

Persons who have had repeated or extended surgeries, particularly those beginning in early life, are especially vulnerable. Patients with spina bifida (myelomeningocele), urogenital abnormalities or intestinal surgery with exposed mucous membrane colostomy have an increased prevalence of latex allergy if latex has been used in their care.

PREVALENCE OF LATEX SENSITIZATION

Of 326 atopic children seen at a university hospital, 3% had a positive latex skin test;¹⁰ and 9.5% of 325 consecutive adult inpatients awaiting surgical or

urological procedures had positive latex skin tests.¹¹ Of 1000 volunteer blood donors, 6.5% had latex-specific immunoglobulin E (IgE) antibodies (men were twice as likely to be sensitized as women, but the prevalence was not associated with race or age).¹² Of health care workers responding to a self-reported questionnaire, 53% described a reaction to rubber gloves.¹³

SYMPTOMS OF LATEX ALLERGY

There are three types of latex allergy symptoms

1. Irritant contact dermatitis.

This nonimmune dermatitis evolves gradually over several days and is not caused by the latex protein, but by glove compression, antiseptic hand washing, numerous glove chemicals, and latex accelerators. Patients present with erythema, scales, and fissures. Avoidance of latex gloves, use of cotton liners, and hand care which minimizes skin pressure can diminish symptoms.

LATEX ALLERGY AND CROSS REACTIVE FOODS

Avocado	Chestnut
Kiwi Fruit	Papaya
Potato	Passion Fruit
Banana	Melon

SOURCES OF LATEX EXPOSURE

MEDICAL

Gloves	Urinary catheters
Tourniquets	Face masks
Wound drains	Adhesive tape
Injection ports	Electrode pads
Bulb syringes	Mattresses
Stethoscope	Ambu bags

HOUSEHOLD

Balloons	Condoms and diaphragms
Rubber bands	Toys
Shoe soles	Erasers
Sports equipment	
Clothing, including elastic on underwear	
Feeding nipples and pacifiers	
Powdered latex gloves used in food handling	
Diapers, incontinence and sanitary pads	
Computer mouse pads	
Carpet backing	
Handles on racquets and tools	

NOTE: For more information see the American Academy of Allergy Asthma & Immunology www.AAAAI.org

2. Delayed type IV allergic contact dermatitis.

The onset of the rash occurs between 6 to 48 hours after contact with the glove chemicals. Symptoms include erythema, blisters, papules, vesicles, pruritis, and crusting.

3. Immediate type 1 hypersensitivity.

Symptoms usually occur within minutes to several hours after contact with the latex protein. They include: local and generalized urticaria, angioedema, nausea, vomiting, feelings of impending doom, and abdominal cramps. Aerosolized latex particles are frequently the causative factor.

Anaphylactic reactions to latex have been reported in patients with a history of allergic or irritant contact dermatitis. It is believed that the disruption in the skin's natural protective barrier increases latex protein absorption.¹⁴ A patient can suddenly develop life-threatening systemic symptoms after using latex gloves for many years.

More than 50% of people with latex sensitivity have a history of atopy.¹⁵ One in four atopic health care workers has a positive skin prick test to latex. Only 50% of these persons, however, are clinically symptomatic.¹⁶

LATEX AND FOOD ALLERGY

Bananas, kiwi fruit, chestnuts, avocado, and tomato may cross-react with the latex protein¹⁷ and cause anaphylactic reactions in latex sensitive persons. Apples, figs, melons, celery, potatoes, papayas, cherries, and peaches have caused oral pruritis, which can progress to more serious symptoms.¹⁸ A person who has reactions to any of these foods may have an increased risk of developing latex allergy. Latex sensitive people should avoid only the food which causes allergic symptoms. It is not recommended that these patients eliminate all the potentially cross-reacting foods: this could result in unhealthy dietary restrictions.

Latex has been called the "hidden food allergy." Particles can be introduced into food products by preparers' gloves. Rhode Island was the first state to ban natural rubber latex glove use in food service. United States Senator Sheldon Whitehouse, State Representative Elizabeth Dennigan, and this writer worked

together to pass the Rhode Island Latex Gloves Safety Act in July, 2001. The law bans latex glove use by any food handler.

DIAGNOSIS

A medical and occupational history which includes questions related to prior latex reactions, in addition to immunologic testing, usually diagnoses latex allergy. Latex allergy risk factors and the nature of past reactions should be thoroughly investigated. Frequently, patients will not attribute their nasal or bronchial symptoms to latex allergy, but confuse the symptoms with those of allergic rhinitis. None of the patients who succumbed to fatal latex anaphylaxis during barium enema examinations, however, had any of the known risk factors other than atopy.¹⁹ Risk factors, unfortunately, may not always predict potential latex allergy reactions.

FDA-approved *in vitro* tests which measure latex-specific IgE are the only methods available in the United States to help diagnose latex allergy.^{20,21} Because these tests have a false-negative rate of approximately 20%, their clinical usefulness is limited.

Rhode Island was the first state to ban natural rubber latex glove use in food service.

MANAGEMENT

The primary treatment of latex allergy, as with most allergies, is avoidance. Reducing exposure to latex in the workplace by using nonlatex, vinyl, or nitrile gloves and nonpowdered, low-protein, latex gloves, will eliminate or reduce the allergen.

Health care workers must be protected from airborne latex antigen, to decrease the risk of future latex sensitization. In 1999, the administration decided to transform the 350-bed Kent County Memorial Hospital into a latex safe hospital. This transition occurred over one year at an approximate cost of \$250,000. All duct vents and surfaces were cleaned or changed; all latex was removed. Latex balloons from florists and latex gloves worn by rescue workers were

banned. The hospital has had no new cases of Workers Compensation related to latex since the transition. In fact, several latex allergic health care workers have returned to their former jobs without consequent symptoms.

Latex allergic patients who must undergo surgery in a non latex-safe hospital should be scheduled as the first case of the day when the likelihood of contact with aerosolized latex particles is low. All latex rubber tubing and blood pressure cuffs must be wrapped to prevent contact with the patient. These patients must be visibly and prominently labeled as latex allergic at the bedside and on wristbands. Occasionally, latex allergic patients are pretreated with steroids, antihistamines, and histamine H2-blockers. Anaphylaxis, however, can occur despite pretreatment.²²

Latex allergic persons should wear Medic-Alert identification, carry two doses of epinephrine, and carry several pairs of nonlatex gloves for use by emergency medical personnel.

TREATMENT OF ANAPHYLAXIS

Acute latex anaphylactic reactions must be treated with epinephrine, oxygen, fluids, and steroids. Maintaining the airway and circulation is essential. Diphenhydramine (Benadryl) may be used to treat urticaria. Staff wearing latex gloves should not treat a latex allergic patient. Transporting an acutely ill latex-allergic patient to a non-latex safe hospital can be extremely dangerous.

LONG-TERM LATEX AVOIDANCE

Latex-allergic persons benefit by eliminating or reducing their exposure to latex. Asthma and bronchial hyperactivity has been shown to decrease in latex-sensitive workers who reduced or avoided latex exposure after a median follow-up period of 56 months.²³ Twenty latex-sensitized anesthesiologists who did not use latex gloves for 10 to 15 months all became asymptomatic; 16 of 18 demonstrated a decline in latex-specific IgE. Their latex skin test titration end points did not change appreciably. This suggests that a longer period of avoidance or stricter environmental controls may be necessary to immunologically improve these patients' sensitivities.²⁴

CONCLUSIONS

Liberia recently announced that it will resume exportation of rubber following its three year civil war. This will lead to sensitization and increased latex allergy in the workers of the restored rubber plantations as well as dissemination of the minute latex protein particle via food preparation and workers' clothing.

Every state should follow Rhode Island's lead and ban the use of latex gloves during the preparation of food in restaurants, institutional kitchens and supermarkets.

There has been a significant increase in latex rubber allergy since the implementation of universal precautions in the late 1980s. People are at a higher risk of developing both immediate, type 1, and delayed type 4 hypersensitivity to rubber latex. Latex gloves are still frequently used during surgery and in food-preparation. Hidden latex protein continues to sensitize unsuspecting, susceptible people. Education on allergen avoidance and cross-reacting allergens can improve management and treatment of latex allergy and, hopefully, one day terminate sensitization.

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The author has no financial interests to disclose.

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Clinical Rounds

Latex failure rate ranges from 1% to 58%

Gloves: Important, But Not Perfect, Protection

Timothy F. Kirn
Sacramento Bureau

PHOENIX, ARIZ. — Gloves are an important way to reduce infection transmission, but they are not quite the 100% effective barrier many assume them to be, Dr. Curtis P. Hamann reported at the annual meeting of the Pacific Dermatologic Association.

Latex gloves are considered the "standard" against which all other gloves are measured, said Dr. Hamann, president of a Phoenix-based medical and dental supply company. But, even on the best of hands, they are less than perfect.

About 60 studies have looked at the failure rate of natural rubber latex gloves in real clinical settings. Those studies have reported rates ranging from 1% to 58%, Dr. Hamann said. Seven studies have investigated the failure of vinyl gloves in the clinical environment. Those studies also report a similarly broad range of failure rates, from 3% to 85%, he said.

The most obvious and most common reason that gloves fail is that they get punctured, often by long nails or jewelry, making those probably the most important factors in glove failure, Dr. Hamann said. But, another factor that physicians are not commonly aware of is the fact that polycarbons can permeate and break down latex, perhaps violating the barrier so that organisms can get through. The substances that contain polycarbons include methacrylates; epoxy resin; alcohols; peroxides; chloroform; glutaraldehyde; and, perhaps most importantly, the petroleum base of many hand lotions.

"Any polycarbons coming in contact [with latex] can create problems," Dr. Hamann said. "Hand lotions that have a petroleum base, applied prior to the donning of the glove, will substantially increase failure. This is why there are very strong labeling requirements on latex [condoms] that they are not to be used with any petroleum-based products."

The fact that such a broad range of failure rates are reported for gloves, regardless of material, suggests that manufacturing has much to do with glove performance, he said. "In many respects, it is less about [choice of] material, than it is about the reproducibility of the manufacturing of that device from that material."

Dr. Hamann compared three popular types of gloves:

► **Latex.** Latex gloves continue to be the most popular. Their elasticity gives the best fit, and latex has the greatest tensile strength of any of the materials used.

The negatives of latex include the prevalence of latex allergy and the fact that it is more affected than other materials by polycarbonates, particularly by hand creams. Moreover, latex is friable, which means it can pick up proteins, contributing to allergic reactions and sensitization. Environmentally, rubber harvesting is decimating Asian forests, he said.

► **Vinyl.** Since polyvinyl chloride (PVC) gloves are the least expensive, they are a good choice for short procedures such as shave biopsies, Dr. Hamann said. They are the most resistant to chemicals of the glove materials. PVC is not friable, so it is less likely to pick up proteins than latex. PVC is also hydrophobic, so the gloves are less likely to swell when exposed to water and sweat—and swelling can make gloves more permeable to organisms. Vinyl gloves have been shown to reduce nosocomial infection transmission.

On the downside, since they do not stretch, wearing PVC gloves is “like wearing a sandwich bag,” and their tensile strength is less than latex, so they can puncture more easily. Being hydrophobic, they can get sweaty, Dr. Hamann said.

► **Nitrile.** Nitrile gloves are more expensive than PVC, but they can be a good alternative to latex for allergic workers because they fit better than PVC—the glove stretches with body heat—and they are the most resistant to punctures of the three materials.

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METHODOLOGY

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LATEX sensitization in elderly: allergological study and diagnostic protocol

Teresa Grieco*, Valentina Faina, Laura Dies, Marzio Milana, Emidio Silvestri and Stefano Calvieri

Abstract

Background: The prevalence of latex allergy varies according to the population studied from 3% to 64%. No data exist in the present literature about elderly people because they were not considered among populations at risk. We report a retrospective observational study of 88 elderly patients of our centre of Dermatology and Allergology at Policlinico Umberto I, University of Rome, Sapienza.

Results: First and second level diagnostic tests showed latex positivity in 11,4% of patients studied for latex allergy in the elderly population.

Conclusions: Our study demonstrates a prevalence of elderly-latex sensitization of 11,4%, showing that allergy to latex is a growing disease that can occur at any age. So, we propose these patients as an additional risk category for latex allergy.

Keywords: Allergological study, Elderly, Latex allergy

Background

Natural rubber latex (NRL) is a natural sap of the rubber tree (*Hevea brasiliensis*), which grows in Africa and the Malaysian peninsular [1,2]. NRL coagulates on exposure to air, giving rise to spherical polyisoprene droplets coated with a layer of water soluble proteins [3]. This compound is filtered and preserved with one of the following: 1) sodium sulfite; 2) formaldehyde; 3) ammonia (0.05–2.0%); or 4) ammonia and 0.025% of a 1:1 mixture of zinc oxide and tetramethylthiuram disulfide in order to alkalinize the pH, which increases stability of NRL and slows down the growth of microorganisms [4-7].

Latex allergy may develop through two major pathways: a) one that is dependent on sensitization to latex protein with a type I immunoglobulin E (IgE)-mediated hypersensitivity reaction, b) one that depends on chemicals mixed with the latex protein such as thiurams, mercaptobenzothiazoles, that are the cause of type IV delayed hypersensitivity reactions [8].

The prevalence of latex allergy varies according the population studied from 3% to 64%, being highest in groups such as healthcare workers, rubber industry workers, patients who have had multiple surgeries, and children with

bladder extrophy or myelodysplasia. It is estimated that more than 15 million people suffer from latex allergy worldwide [9-11]. Among the general population the range of sensitization is between 5% and 10%, while in the health-care workers it is approximately 10 to 17% [12]. Allergy risk is increased in individuals who have cumulatively prolonged exposure to latex for several reasons, such as exposure at work, in the home environment and while engaging in hobbies.

Although latex allergy is most common in adults, no data are available in the present literature on the incidence in elderly people, essentially because they were not considered as risk-population. However, we have clinical evidence that after latex contact, this group of patients may develop severe reactions. Therefore, we report a retrospective observational study of elderly population arrived at our Centre of Dermatology and Allergology at the Policlinico "Umberto I" Hospital of the University of Rome, Sapienza.

The present study aims to determine:

- latex allergy prevalence in elderly people
- the peak of prevalence in relation to sex and age
- class sensitization in our patients
- diseases related to latex allergy
- diseases due to latex allergy in our population of patients.

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Patients and methods

The study "latex sensitization in elderly: allergological study and diagnostic protocol. Retrospective study." was approved by the ethics committee of the University of Rome "Sapienza" (3089/13/02/2014).

Study population

From January 2003 to May 2012, 912 patients joined the investigation of first level (RAST) for latex sensitization. Of these 912 patients we selected, on the basis of old age, 88 aged 65 or over, representing our cases study. In particular, we selected 27 males and 61 females, aged from 65 to 86 years whose average age was 71,7 years.

The patients were subjected to the following study protocol:

- clinical history according to American Latex Allergy Association test [13];
- cutaneous clinical examination;
- first level blood tests, according to good practice referred to in the literature [14,15], although there are not any real guidelines:
 - RAST test to detect latex-specific IgE;
 - specific IgE recognition patterns to recombinant *Hevea brasiliensis* (Hev b).
- If RAST was negative, second level in vivo tests were performed:
 - latex-skin prick test;
 - patch test in line with European standard series;
 - rubber additional series;
 - NRL additional series;
 - latex specific series "TRP-LTX 960";
 - patch by patch with latex gloves.
- Challenge tests are not performed for severe adverse reactions risk referred to in the literature.

Clinical history

Patients were asked to collect the following information:

- demographic data (name, age, gender, employment status);
- work-related data and after-work activities;
- number of surgical interventions undergone;
- previous respiratory disease;
- family and personal history of atopy;
- cutaneous, nasal, ocular or respiratory symptoms and their association with the workplace and/or with the use of latex gloves or with some hobbies;
- allergic reactions after contact with latex products or with fruits related to latex allergy (banana, kiwi, chestnut, and avocado);

- use of latex gloves or other materials;
- previous diagnosis of latex allergy.

The same data can also be collected by submitting a questionnaire to the patient and the questionnaire from the American Latex Allergy Association was quite helpful [13].

Rast and protein microarray test procedure

We used the ImmunoCAP system to determine serum specific IgE to latex and its main allergens in recombinant form (rHev b 1, rHev b 6.01, rHev b 6.02, rHev b 6.03, rHev b 8 and rHev b 11). A reading of more than 0.35 kUA/L was considered positive. In particular, distinguish 7 sensitization classes: class 0 (<0.35 kUA/L), class I (0.35-0.70 kUA/L), class II (0.71-3.50 kUA/L), class III (3.51-17.50 kUA/L), class IV (17.51-50 kUA/L), class V (51-100 kUA/L), class VI (>100 kUA/L).

Skin prick test

The skin test procedures are performed with a lancet pricking the skin on the forearm through a drop of latex extracts (ALK-ABELLO®) at sequential concentrations of 0.001-1 mg/mL of latex protein. The results are read after 15 minutes and are compared to a negative saline control and histamine. The presence of a wheal with an average diameter equal to or greater than 3 mm [16] was interpreted as a positive reaction.

Patch test

The allergens are applied to Finn chambers. The Finn chambers are placed on the upper back and removed after 72 hours (D3) for European and rubber series (MERK®). While reading for latex patch test were performed after 30 minutes, 48 hours (D2) and 96 hours (D4). A commercial non-ammoniated latex (ALK-ABELLO®) was used. Positive reactions were evaluated according to International Contact Dermatitis Research Group recommendations [17]. Irritant reactions were considered negative. The patients were also tested with a patch by patch with a latex glove and were also studied with a latex specific series "TRP-LTX 960" (EUROMEDICAL®).

Statistical analysis

The cases considered was analyzed statistically with descriptive statistical index (percentage, average). In particular it was calculated the prevalence of subjects with latex-RAST test and latex-SPT positivity. This prevalence was calculated at 95% confidence interval with the Wilson method.

The association between latex sensitization and gender and age, as well as with certain disorders (eg, urticaria) was carried out using the chi square test of Pearson or the Fish's exact test where appropriate. The level of the first type error (α) has been set equal to 0.05.

Results

From a total of 88 (27 male, 61 female) elderly patients, aged from 65 to 86 years whose average age was 71,7, 46 of them (52,3%) displayed only cutaneous symptoms:

- irritant/allergic contact dermatitis
- generalized urticaria
- angioedema;

12 patients (13,6%) reported respiratory and/or mucosal reactions

- rhinoconjunctivitis
- asthma;

2 patients (2,2%) reported severe generalized reaction

- glottis oedema
- anaphylactic shock;

3 patients (3,4%) reported an adverse reaction during surgery;

1 patient (1,2%) reported adverse drug reactions;

24 patients (27,3%) showed polisensitivity for aeroallergens such as dermatophagoides, grass pollen and tree pollen.

First level diagnostic test such as latex-RAST test, showed latex positivity in 8 patients, 4 males and 4 females.

Four subjects had a RAST value of I class, 3 of II class and only 1 of III class, with a mean level of 3,5 kUA/L (0.35-100 kUA/L).

In particular, 4 of these positive patients were aged in the range from 75 to 79 years, 2 patients were aged in the range from 65 to 69 years and the other 2 patients in the range from 80 to 84 years with a peak of prevalence from 75 to 79 years.

Microarray-based assessment of serum specific-IgE recognition patterns detected a positive results for the following NRL proteins: 2 patients were rHev b 8 and only 1 patients was rHev b 11 positive.

The second level in vivo investigation tests were performed on 80 serum specific-IgE negative patients. The skin prick test revealed 2 more females with positivity, for a total of 10 patients positive to latex, with a prevalence of 11.4% evaluable in population with a 95% confidence interval between 6.3% and 19.7%. This prevalence is not influenced neither by sex nor age since there is no a significant difference between these variables. In fact, using the chi square test of Pearson or the Fish's exact test, we have linked the latex sensitization with different diagnoses and sex of patients, but because of the sample is too small, has not revealed any significant results.

Although there are not significant differences regard to diagnosis, we found a higher percentage of sensitization

among patients who reported urticaria and angioedema, followed by adverse drug reactions (ADR), contact dermatitis and finally asthma and polisensitivity to aeroallergens.

All patients were also patch tested according to European standard series, NRL, additional rubber series, patch by patch with a latex gloves, and with a latex specific series "TRP-LTX 960" (EUROMEDICAL).

The European series showed 1 positivity for nickel sulphate in a woman whereas, all NRL-patch tests and patch by patch with a latex gloves resulted negative.

Additional rubber series showed positive results to paraphenyldiamine and thiuram mix allergens in to 2 females.

"TRP-LTX 960" showed positive results in 1 female, that had also displayed a positivity to Thiuram.

We did not perform provocation tests, such as specific nasal provocation and inhalation [18], and use test [19] because there is no standardized use tests material available and for the risk of anaphylactic reactions [20,21]. Furthermore the challenge test does not exclude adverse reactions in the future.

Discussion

Latex allergy emerged relatively recently as an important medical condition. Until 1979, rubber allergy, especially from gloves, was usually in the form of a type IV delayed hypersensitivity, contact dermatitis reaction [22]. In 1979, Nutter described a woman with type I latex allergy having used household NRL gloves manifested by contact urticaria [23]. With the rapidly increasing number of cases, type I latex allergy became a major medical, occupational health, medico-legal and financial problems during the 1990s [22,24]. By 1997, the US Food and Drug Administration (FDA) had received more than 1700 reports of severe allergic reactions to medical latex devices [25,26]. It is estimated that more than 15 million people suffer from latex allergy worldwide [9-11]. Among the general population the range of sensitization is between 5% and 10%, while in the healthcare workers it is approximately 10 to 17% [12].

Currently there is no agreement about guidelines and patients study protocols and in literature there are no official documents about it and there are discrepancies. In fact, for example, while in Europe and in Canada extracts for latex skin prick test are available [12], in the USA there are no FDA-approved skin test reagents for latex [27]. The only national and international guidelines concerning the prevention and reduction of risk were drawn up in 2008 by an Italian research group [28].

The prevalence of latex allergy depends on the population studied, ranging from 3% to 64%, being highest in certain groups. However in literature there are no data available about latex sensitization in elderly population and this group of patients is not considered among the populations most at risk.

Our study shows that among our elderly population aged 65 or over, 10 patients resulted latex positive, with a prevalence of sensitization of 11.4%, and if compared to the general population of 912 total patients, this percentage decrease to 1% of all patients studied.

However, our results show that allergy to latex is a growing disease that can occur at any age. We therefore suggest to consider people aged over 65 affected by urticaria and angioedema, contact dermatitis, respiratory and/or mucosal reactions, adverse drug reactions and polysensitivity for aeroallergens, as additional risk categories. In addition, elderly patients are more vulnerable because of the frequent presence of comorbidity that often requires hospitalization and surgery. The failure to diagnose such an allergic disease can result in serious consequences. It's important to identify patients at risk, to make a quick and correct diagnosis and therefore to be able to manage the patient.

So, our proposal is to carry out the study for latex allergy in the following patient-types:

- those aged from 65 to 86, with a peak in the range 75-79 years;
- those reporting diseases such as urticaria, angioedema, adverse drug reactions, contact dermatitis and finally asthma and polysensitivity to aeroallergens;
- we also suggest the submission at the second level in vivo tests (skin prick test) the patients with a highly suspected clinical history for latex sensitivity, even if the RAST is negative.

Conclusions

The increasing recognition of latex allergy needs a more accurate investigation, starting from the clinical history. In fact, in our study 2% of positive adult patients reported hypersensitivity to latex, but the others had not experienced any problems before retirement. This may be related to more hours spent at home and the hobbies practiced. In fact some of these patients reported having initiated activities such as scuba diving, bowling and stamp collecting. It is important to perform a complete allergological study of these patients to have as much scientific evidences as possible also because in literature there are no studies on latex sensitization in the elderly.

Consent

Written informed consent was obtained from the patient for the publication of this report and any accompanying images.

Abbreviations

NRL: Natural rubber latex; ADR: Adverse drug reactions; D2/3/4: Day 2/3/4.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

TG conceived of the study, and participated in its design and coordination and helped to draft the manuscript. All authors read and approved the final manuscript.

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Food

The gloves can come off, as far as I'm concerned



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Food service gloves have various levels of usefulness, and none are without their problems. (Deb Lindsey/FOR THE WASHINGTON POST)

By Aliza Green June 12, 2012

A food preparation worker washes her hands and puts on gloves. She needs to make chicken salad. She starts by seasoning the poultry pieces, rubbing them with salt, pepper and herbs, and then spreads them out in a pan for steaming. Wearing the same pair of gloves, she dices celery and onions. She makes the

dressing. Finally, she cuts up the cooked chicken, mixes the salad and packs it away, ready to sell.

A line cook with gloves on his freshly washed hands gets an order for a hamburger, grabs the raw patty from the refrigerator and slaps it on the grill. Once the burger is cooked, he picks up a bun and plates up the burger with lettuce, tomato and fries — all without pulling on a new pair.

In my more than 35 years in the food business as a chef and consultant, I have seen a lot of scary things. And those common scenes are among them.

I've been in and out of the kitchens in hotels and independent restaurants, of caterers and commissaries. These days, food handlers are expected to wear gloves especially when they're working in public view. However, those gloves are good only if the hands they are covering are clean. To my mind, gloves are problematic; people equate them with food safety. (Take the accompanying poll.)

According to a 2007 study in the Journal of Food Protection, "Hand washing and glove use were also related to each other — hand washing was less likely to occur with activities in which gloves were worn." A 2010 study in the same journal concludes, "Glove use

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can create a false sense of security, resulting in more high-risk behaviors that can lead to cross-contamination when employees are not adequately trained.” Also in the report: “Occlusion of the skin during long-term glove use in food operations creates the warm, moist conditions necessary for microbial proliferation and can increase pathogen transfer onto foods through leaks or exposed skin or during glove removal.” In other words, just wearing gloves can create dangerous conditions.

With the use of food-safe gloves of various materials, we have created a new set of problems as well: the huge waste of resources in producing and disposing of billions of pairs every year. It’s money that could be spent on kitchen improvements such as providing automatic or foot pedal-operated hand sinks and enough time for workers to wash their hands a reasonable number of times per day. People may be allergic to gloves, especially those made from latex, while potentially carcinogenic and toxic materials are used in making certain types of gloves.

Although there are some very good arguments to be made for wearing gloves in certain circumstances, such as when mixing a batch of meatballs and when workers have a wound on their hands, we should

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“People put those darn gloves on and they think they’re protected,” says Denise Korniewicz, dean of the college of nursing at the University of North Dakota and an expert on the efficacy of gloves. “The best way to prevent the transmission of bacteria, virus or other bug is to wash hands thoroughly, adhering to the protocols that we know work. When evaluating food safety, it’s not the gloves I observe; rather it’s what workers are doing with their hands, like using the phone or wiping their nose.”

Studies done in the United Kingdom and published in 2010 concluded that gloved hands can contribute as much, if not more, bacteria to foods than bare hands. That same year, an American study in a fast-food restaurant found more than twice as much coliform bacteria in tortilla samples handled by gloved workers compared with bare hands.

“We may need to make sure workers wash by putting cameras in the sink area of restrooms,” Korniewicz says. “All too often, they haven’t been provided with convenient, clean hand sinks with plenty of soap and paper towels. If enough time and proper materials for washing were provided, we could all have more confidence in the safety of prepared food, reducing

our dependence on gloves.”

In 2006 and 2007, the Centers for Disease Control randomly selected 321 restaurants across the country to monitor workers' hygiene. The findings: Workers washed their hands appropriately in only 27 percent of activities in which hand-washing was recommended, about nine activities an hour, and that “attempted and appropriate hand-washing rates were significantly lower when gloves were worn than when gloves were not worn.”

Using gloves in the kitchen dates back further than you might realize. In Rome about 2,500 years ago, “the wealthier classes kept slave bakers; very grand people made these slaves wear gloves to knead the dough and masks to protect it from perspiration and the breath of the common person,” according to “A History of Food,” by Maguelonne Toussaint-Samat. The first use of rubber gloves was in 1883. Eleven years later, they were included in the standard surgical procedure at Johns Hopkins Hospital. An Australian company, Ansell, created the first disposable latex medical gloves in 1964 by adapting the technique they use for the manufacture of condoms.

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Barry Michaels, an international scientific consultant on food safety based in Palatka, Fla., says “gloves provide a last line of defense against food contamination, separating food workers, who are often under pressure to work while sick, from ready-to-eat food. We know that usually less than 50 percent of food workers wash after using the restroom. It’s a matter of trust. In a fast-food restaurant, I’m less likely to trust that workers even show up to work clean, as they often have limited training. In a chef-driven restaurant where the bathrooms and trash area are clean and the crew behavior is professional, I would be somewhat confident even if they’re not using gloves.”

Pitfalls and potential for failure notwithstanding, many chefs opt for gloves.

“We use gloves quite a bit in the kitchen,” says Ruth Lefkowitz, owner of Ruthy’s Real Meals in Sonoma, Calif. “My assistant uses them when handling raw meats and when packing up the meals we deliver. I like donning gloves at events. It makes it easier to keep your hands clean.”

Jared Johnson, executive chef for the Heathland Hospitality Group in Philadelphia, told me “the average person is more aware of cross-

contamination and food-borne illnesses than 10 years ago. If my crew wears gloves while serving, it puts the customer at ease and we can focus on the food and service. However, I'm not a fan of wearing gloves while chopping, because glove pieces could end up in the food."

Wearing gloves is meant to protect the consumer from dangerous diseases that can be transmitted mostly through ready-to-eat foods. Culprits include the viruses hepatitis A and the highly contagious norovirus, responsible for about 50 percent of all outbreaks of food-related illness and transmitted through foods such as leafy greens, fresh fruits and shellfish. Bacteria that cause serious food-borne illnesses include E. coli, found in cattle and in infected humans; salmonella typhi, which lives only in humans; shigella, which is transmitted mostly through eating or drinking contaminated food or water; and listeria, which is found in unpasteurized dairy products and ready-to-eat foods such as deli meats and soft cheeses.

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There is a part of the industry where gloves have

become a boon. Because sushi chefs are cutting and serving the flesh of uncooked fish and seafood, it's important they take special precautions. Hiroyuki "Zama" Tanaka, owner of Zama Sushi in Philadelphia, says "using gloves is a big revolution for the sushi industry as it goes against tradition. It took a few months to get comfortable working with gloves on, but I've been working with them now for 12 years. It's easier to train someone, because the special Japanese sushi gloves I use — Emboss Five-Finger Squeeze Gloves — have a textured surface that actually makes it easier to work with sushi rice and raw fish.

"Many of my customers have allergies, especially to shellfish," he adds. "We can be working with shrimp, and if a customer tells us they have an allergy, we can all change our gloves. And, because the flavors and marinades don't transfer, the taste is purer."

Regulations for glove use vary greatly within and outside the United States. The FDA recommends handwashing before making food and putting on gloves to make food. In New York state, ready-to-eat food must be prepared and served without bare-hand contact by wearing gloves or, alternatively, using tongs, forks and spoons, deli paper, wax paper,

napkins or spatulas. The Arkansas Department of Health has a different viewpoint: "Glove usage has not been proven to lower the incidence of food-borne illnesses. Gloves become just as dirty as the bare hand but are not as likely to be replaced as often as the hands are washed."

Note that liquid hand sanitizers are to be used after handwashing, not as a substitute for it, and that hands must then be allowed to air-dry after using them and before working with food.

Until the HIV epidemic in the '80s, there were only a few glove types available; today, there are more than 200. But finding an acceptable material is challenging. Latex gloves offer good dexterity, a snug fit and good tactile sensitivity and can withstand high heat. But due to sometimes severe allergic reactions to latex (a product of the rubber tree mostly from Malaysia), Oregon, Massachusetts and Rhode Island have banned latex gloves in food service. Nitrile gloves are durable and provide good dexterity at moderate cost but commonly contain Bis(2-ethylhexyl) phthalate, or DEHP, added to make gloves more flexible. DEHP is a potential carcinogen and reproductive toxin banned in Japan and the European Union in food service gloves.

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Something else to worry about.

Thin, one-size-fits-all polyethylene gloves are the least expensive, but they tend to tear easily and can't be used around high heat. Vinyl (polyvinyl chloride, or PVC) gloves can fit snugly but because they may begin leaking as soon as they are donned, they have been described in Food Safety Magazine as "infection control nightmares."

Regulations and practices must be workable, however. I recently had to take a ServeSafe course created by the National Restaurant Association. Food managers working in Philadelphia are required to take it and to pass the certification exam. My classmates included a young woman starting a specialty cookie business, the manager of a senior services facility in a church, the owner of a drive-in movie theater that serves food and the owner of a neighborhood pizzeria.

I found the information overly detailed, highly impractical and lacking in simple basic principles based on common sense. In one case study in the

course book, a food worker was supposed to have washed his hands 12 times in the time between breakfast and lunch service. That would never happen in any kitchen I've ever seen.

To improve food safety in real-life conditions, the CDC recommends revising food preparation methods to reduce the number of handwashings needed, for example by decreasing the number of times a worker has to handle raw meat when making a sandwich.

On a recent trip to Puglia, Italy, I visited two fresh mozzarella producers with stainless-steel and tile facilities that are certified under internationally recognized food safety protocols.

I went to a buffalo-milk mozzarella maker in Campania on an earlier trip. Though workers in all three places practice food safety and keep impeccably clean conditions, not one of the cheesemakers wore gloves.

“Unlike in Europe, where workers take pride in what is often a life-long profession, our culture emphasizes waste,” says Barry Michaels, the food safety consultant. “The highly competitive U.S. food service world is often a race to the bottom . . .

employing workers — often kids — making minimum wage, wearing millions of pairs of gloves each year to prepare what isn't even real food. In other words, the gloves are there to try to protect us from ourselves.”

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In the end, no one thing keeps our food safe, though regular and thorough washing of hands and judicious use of gloves definitely reduces risk.

Australian food safety experts say it best: “A clean hand is better than a dirty glove.”

How food-service gloves compare

The pros and cons of gloves

Philadelphia chef-consultant Green's most recent book is “The Butcher's Apprentice: The Expert's Guide to Selecting, Preparing, and Cooking a World of Meat” (Quarry, 2012). Join her for today's Free Range chat: live.washingtonpost.com.



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Rubber Gloves: "Born" - and Now Banished - At Johns Hopkins - 01/14/2008

-- move addresses potentially fatal allergy to latex

Release Date: January 14, 2008

William Stewart Halsted, The Johns Hopkins Hospital's first surgeon in chief, is widely credited as the first to develop and introduce rubber surgical gloves in the United States. That was in 1894, five years after the institution opened.

Now, in an effort to make medical care safer for patients and health care workers, The Johns Hopkins Hospital has become the first major medical institution to become "latex safe" by ending all use of latex gloves and almost all medical latex products.

"Latex hospital gloves were invented here, so it's only fitting that Johns Hopkins takes the initiative to promoting alternatives," says Johns Hopkins anesthesiologist [Robert H. Brown, M.D., M.P.H.](#), the chair of the John Hopkins Hospital Latex Task Force and one of many Hopkins faculty and staff members who have contributed to making the hospital latex-safe.

It was at Hopkins that immunologists Robert Hamilton, Ph.D., and Franklin Adkinson, M.D., conducted early key research related to the problems of natural rubber latex as an allergen. Furthermore, Brown points out, the nurses and other frontline hospital workers have been instrumental in implementing the latex-safe policy and educating the staff. Studies show that roughly 6 percent of the general population and up to 15 percent of health care workers are allergic to latex, with the higher rate among medical personnel due to longer periods of contact with natural rubber. In addition to surgical gloves, latex is used in numerous medical devices such as tourniquets, blood pressure cuffs and stethoscope tubes. The anaphylactic reactions, similar to those caused by foods such as peanuts or by bee sting allergies, can include a drop in blood pressure, an irregular heartbeat, swelling in the hands and feet and constriction of the airways. In extreme cases, anaphylactic shock, which can occur minutes after the exposure, can lead to death.

Allergic reactions generally result from exposure to natural proteins, in this case proteins specific to natural rubber latex, a product from rubber trees.

Currently available replacement gloves are made of one of three synthetic products -- neoprene, polyisoprene or vinyl, none of which contain natural plant proteins.

Johns Hopkins is now using sterile neoprene and polyisoprene gloves in the operating room because they have a more sensitive feel.

"The sensitivity and fit of the new gloves are the same as what you get with latex gloves," says [Julie Frieschlag, M.D.](#), professor and chair of surgery. "Unless someone told you, you wouldn't know the difference. The only down side is that they are a little more expensive."

Sterile neoprene and polyisoprene gloves cost 30 percent to 50 percent more than latex gloves. Nonsterile neoprene and vinyl examine gloves cost approximately the same as those made from latex. Johns Hopkins uses mostly neoprene gloves for all nonsterile procedures that require glove protection.

Dr. Brown says the risk of developing an allergic reaction to latex is higher if contact is made with broken skin or mucous membranes - such as when hands are raw from multiple scrubbing or when health care workers breathe in the powder that makes the gloves easier to put on. Patients for whom latex medical products are commonly used for treatment - such as children with conditions such as bladder exstrophy or spinal bifida - can have as high as an 80 percent chance of developing an allergic reaction to the natural rubber latex.

Halsted is reported to have developed the latex glove to protect the hands of his scrub nurse from the harsh antiseptics in widespread use as disinfectants. By 1966, disposable latex gloves were the norm in operating rooms nationwide, and in the 1980s, the need for "universal precautions," prompted by the AIDS epidemic, increased their use outside the operating room and among health care workers everywhere. As glove use proliferated, so did the rate of allergic reactions, and by the mid-1990s, latex allergies were considered a major health issue. Dr. Brown says he prefers the term "latex safe" to "latex free" because removing all sources of natural rubber remains a bit of a challenge.

"We are still searching the hospital for the few remaining medical latex products that we might have overlooked, although we can safely say that all major latex products that are a clear risk to health care workers and patients have been eliminated," he says.

Podcast: Robert Brown and Julie Frieschlag talk about the transition to latex-free surgical gloves and a latex-safe environment at Johns Hopkins

<http://www.hopkinsmedicine.org/media/Podcasts/latex.html>

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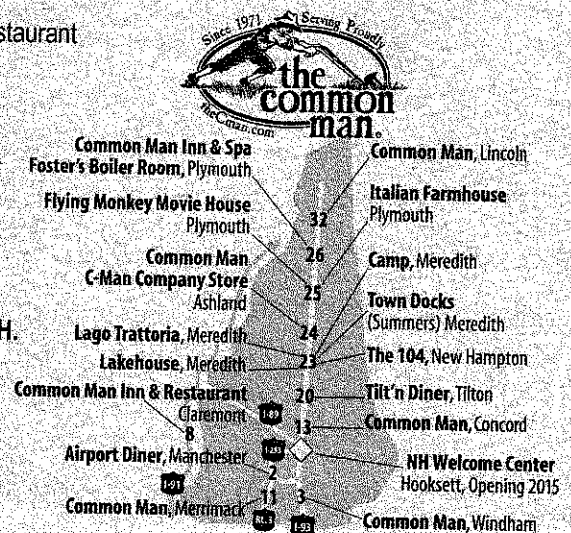
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Food Allergy Facts and Statistics for the U.S.

- Food allergy is a growing public health concern.
- As many as 15 million people have food allergies.^{1, 2, 3, 4, 5}
 - An estimated 9 million, or 4%, of adults have food allergies.^{2, 3, 5}
 - Nearly 6 million or 8% of children have food allergies with young children affected most.^{3, 4, 6, 7, 8}
- Boys appear to develop food allergies more than girls.⁵
- Food allergies may be a trigger for or associated with other allergic conditions, such as atopic dermatitis⁹ and eosinophilic gastrointestinal diseases.¹⁰
- Although childhood allergies to milk¹¹, egg¹², wheat¹³ and soy¹⁴ generally resolve in childhood, they appear to be resolving more slowly than in previous decades, with many children still allergic beyond age 5 years. Allergies to peanuts, tree nuts, fish, or shellfish¹⁵ are generally lifelong allergies.

Food Allergies are on the Rise

- The prevalence of food allergies and associated anaphylaxis appears to be on the rise.⁶
 - In 2008, the CDC reported an 18 percent increase in food allergy among children between 1997 and 2007.¹
 - According to a study released in 2013 by the Centers for Disease Control and Prevention, food allergies among children increased approximately 50% between 1997 and 2011.¹⁶
 - The economic cost of children's food allergies is nearly \$25 billion per year.¹⁷

Top Food Allergens

- Eight foods account for 90% of all food-allergic reactions: milk, eggs, peanuts, tree nuts (e.g., walnuts, almonds, cashews, pistachios, pecans), wheat, soy, fish, and shellfish.^{5, 15, 18, 19, 20, 21, 22, 23, 24, 62} Estimated prevalence⁹, some based on self-report, among the U.S. population:
 - Peanut: 0.6-1.3%
 - Tree nuts: 0.4-0.6%
 - Fish: 0.4%
 - Crustacean shellfish (crab, crayfish, lobster, shrimp): 1.2%
 - All seafood: 0.6% in children and 2.8% in adults

- Milk and egg: based on data within and obtained outside the United States, this rate is likely to be 1-2% for young children and 0.2-0.4% in the general population.

Managing Food Allergies

Cooking and Cleaning

- A study showed that peanut can be cleaned from the hands of adults by using running water and soap or commercial wipes, but not antibacterial gels alone. In addition, peanut was cleaned easily from surfaces by using common household spray cleaners and sanitizing wipes but not dishwashing liquid alone.²⁵
- Some studies have shown that most individuals with peanut and soy allergies can safely eat highly refined oils made from these ingredients. However, cold-pressed, expeller-pressed, or extruded oils should be avoided. Talk to your doctor about avoiding oils made from ingredients to which you are allergic.^{26, 27, 28, 29, 30, 31}
- Casual exposure, such as skin contact and inhalation, to peanut butter is unlikely to elicit significant allergic reactions.^{32, 33}
 - *Note: Casual exposure presents a greater risk to young children who frequently put their hands in their mouths. Depending on the amount of contact and the location of the contact, these reactions are occasionally more serious.*^{32, 33}
- Food proteins released into the air from vapor or steam from foods being cooked (e.g., fish, milk) can potentially cause allergic reactions, but this is uncommon and has been noted mainly with fish. Reactions from vapor or steam are similar to what you would expect from pollen or animal dander exposures, for example hay fever or asthma symptoms.^{8, 34, 35}

Conventionally Packaged Food Labels

- According to the Food Allergen Labeling and Consumer Protection Act (FALCPA) the major eight allergens must be declared in simple terms, either in the ingredient list or via a separate allergen statement. However, FALCPA does not regulate the use of advisory/precautionary labeling.³⁶
 - *Note: Advisory/precautionary labeling (e.g., “may contain”, “in a facility that also processes”) is voluntary. The terms do not reflect specific risks and random products tested for allergens have shown a range of results from none to amounts that can cause reactions.*^{9, 37}

Dining Away From Home

- Eating away from home can pose a significant risk to people affected by food allergy. Research suggests that close to half of fatal food allergy reactions are triggered by food consumed outside the home.^{38, 39, 40}
- One study looking at peanut and tree nut allergy reactions in restaurants and other food establishments found that reactions were frequently attributed to desserts, that Asian restaurants and take-out dessert stores (bakeries, ice cream shops) were common sources of foods that triggered reactions, and that the food establishment was often not properly notified of a food allergy by the customer with the allergy.⁴¹

Travel

- Research on self reported reactions occurring on commercial airlines show that reactions to peanuts and tree nuts do occur on airlines via ingestion, contact, and inhalation. Ingestion of an allergen remains the main concern for severe reactions.^{42, 43, 44}

Food Allergy Reactions and Anaphylaxis

- The CDC reported that food allergies result in more than 300,000 ambulatory-care visits a year among children under the age of 18.¹
 - From 2004 to 2006, there were approximately 9,500 hospital discharges per year with a diagnosis related to food allergy among children under age 18 years.¹
- Even small amounts of a food allergen can cause a reaction.^{45, 46, 47, 48, 49, 50}
- Most allergic reactions to foods occurred to foods that were thought to be safe. Allergic reactions can be attributed to a form of mislabeling or cross-contact during food preparation.^{38, 39, 40}
- Food allergy is the leading cause of anaphylaxis outside the hospital setting.⁵¹
 - Every 3 minutes a food allergy reaction sends someone to the emergency department—that is about 200,000 emergency department visits per year, and every 6 minutes the reaction is one of anaphylaxis.⁵²
- Teenagers and young adults with food allergies are at the highest risk of fatal food-induced anaphylaxis.^{38, 39, 40}
- Symptoms of anaphylaxis may recur after initially subsiding and experts recommend an observation period of about 4 hours to monitor that the reaction has been resolved.^{53, 54}
- Individuals with food allergies who also have asthma may be at increased risk for severe/fatal food allergy reactions.^{38, 40}
- Children with food allergy are 2-4 times more likely to have other related conditions such as asthma and other allergies, compared with children without food allergies.¹
- It is possible to have anaphylaxis without any skin symptoms (no rash, hives).¹
- Failure to promptly (i.e., within minutes) treat food anaphylaxis with epinephrine is a risk factor for fatalities.^{38, 39}

Food Allergy Treatment

- There is no cure for food allergies. Strict avoidance of food allergens and early recognition and management of allergic reactions to food are important measures to prevent serious health consequences.⁵⁵

- Prompt administration (e.g., within minutes of symptoms of anaphylaxis) of epinephrine (adrenaline) is crucial to successfully treating anaphylactic reactions. Epinephrine is available by prescription in a self-injectable device (EpiPen®, Auvi-Q® or Adrenaclick®, depending on local availability).⁵⁶
- There are a number of promising food allergy therapies under study, although none are yet proven for general use.

Food Allergies in School

- Approximately 20-25% of epinephrine administrations in schools involve individuals whose allergy was unknown at the time of the reaction.⁵⁷
- More than 15% of school aged children with food allergies have had a reaction in school.^{58, 59} Food allergy reactions happen in multiple locations throughout the school, and are not limited to the cafeteria. Care must be exercised regarding bake sales, classroom parties, and snacks outside of the cafeteria.^{40, 60, 61}

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<http://www.fda.gov/downloads/Food/GuidanceRegulation/UCM189448.pdf>

"Safe material" means:

- (1) An article manufactured from or composed of materials that may not reasonably be expected to result, directly or indirectly, in their becoming a component or otherwise affecting the characteristics of any FOOD;
- (2) (9) Describing FOODS identified as MAJOR FOOD ALLERGENS and the symptoms that a MAJOR FOOD ALLERGEN could cause in a sensitive individual